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THE UNIVERSITY OF ALBERTA

TECHNOLOGY, COMPUTER USE, AND THE PEDAGOGY OF WRITING

by

Stefán Baldursson

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SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
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DEDICATION

To my father

ABSTRACT

In this study it is proposed that the educational problem of the use of computers in the curriculum is neither a technical nor a scientific problem, but a pedagogic one. This is to say, neither the computer scientist *as* computer scientist, nor the psychologist or sociologist for that matter, has anything essential to say about the educational problem of computers. As a pedagogic concern the question about computers in schools is a practical/ethical problem, requiring a different kind of theorizing and research than is usually found in positivistic educational inquiry. By suggesting that the Aristotelian-Gadamerian notion of practical reasoning (*phronesis*) may be used as the model for understanding the application of computers in schools, the problem is presented as a *hermeneutical problem* -- a problem of interpretive understanding of the meaning of computers and of the self-understanding of educators. All genuine understanding, according to this view, is guided by a *wirkungsgeschtliches Bewüsstsein*, a consciousness of historical finitude, which endeavors to enlarge its horizon; the fundamental assumption is that there exists an inextricable relationship between the practical and the theoretical in hermeneutic thinking.

To view the application of computers in schools as a hermeneutic problem under the auspices of practical reasoning means to give the notion of application a non-technical significance. The technical notion sees application as the utilization of scientific or technical knowledge to predefined tasks in the most efficient way possible. In contrast, practical/ethical reasoning reveals application as a problem of understanding of meaning and of thoughtfulness. Whereas in the technical mode there exists most often a fairly explicit knowledge of the end, the things to be produced, and often of the means to reach that end, there is no such *a priori* knowledge of the right means available in the practical/ethical mode of application. Indeed, in practical/ethical reasoning the ends and

means are co-determined on the basis of a reflection on the pedagogic Good of the ends and the suitability of the means (which indicates that there is no knowledge of the meaning of computers as such, only particular applications). It is only through such reflective consideration (deliberation) that the meaning of means and ends receive the concrete significance necessary for an understanding the idea of application. In other words, it is only in relation to a concrete application that the meaning of computer technology shows itself. It is furthermore proposed that a hermeneutic pedagogical reasoning about application must become *phenomenological*, that is, it must be grounded in an understanding of the meaning of lived experience of the technology.

The main focus of this study is on *word processing*, the application of computers to the process of writing. How do we understand word processing as a problem of practical reasoning? By formulating the question about word processing in terms of practical or ethical reasoning I imply that the decisive thing is not the efficiency of the word processor as a writing instrument in comparison with other means of writing. The primary concern is not the factual aspects of word processing; it is the *meaning* of the application that is the object of this study. The objective is to put word processing in its proper perspective by exploring the context of meaning disclosed by word processing and by exploring the truth of these presupposition in the light of lived experience of users and the tradition to which we belong, primarily the notion of writing presupposed in word processing. In a Heideggerian manner one could say that the task is to disclose the *truth* of word processing. Such knowledge does not give educators blueprints for actions but it may foster the kind of thoughtfulness that creates the condition for a tactful use of word processors in the teaching of the mother tongue.

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Chapter I

INTRODUCTION

From 1929 to 1931 Wood and Freeman (1932) conducted an extensive investigation on the "educational effects of the use of typewriters in schools." The main purpose of the investigation, which was funded by four manufactures of portable typewriters, was to study the nature and extent of the educational influences of the portable typewriter when used as a part of the regular classroom equipment in the kindergarten and elementary school grades. The magnitude of the investigation can be estimated from the fact that during the first year nearly fifteen thousand children and over four hundred teachers were involved in the study (p. 7). In an invitation that was issued to the superintendents and headmasters of the schools that participated in the investigation we find the following statement of purpose:

> The guiding question is, "What are the values (if any) and disadvantages (if any) of the typewriter as a pedagogical instrument in the elementary school? Since the typewriter in the elementary school will be very intimately associated with the very taproot of education -- writing, reading, etc. -- this study is concerned with a question of fundamental educational significance. It is in the light of this fact that selected schools will be invited to participate in a serious and carefully planned effort to answer the question stated above. (p. 5)

The contemporary reader of this report is likely to be struck by at least two things: first, by the high expectations associated with the use of the portable typewriter in schools in the early thirties, particularly when we consider that fifty-eight years later, the typewriter is used primarily in experimental classrooms in the early grades; and secondly, by the striking similarities between these early expectations and contemporary expectations surrounding the use of computer technology in schools. In fact, the similarities are much stronger than the previous account suggests. In the Wood and Freeman study the reader is shown pictures of children working in small groups on the typewriter, "drawing" pictures with "X's", and pictures of poems composed by children directly on the typewriter, quite similar to what we find today in books on the use of computers in schools. It seems that if we would exchange the word "computer" for "typewriter" in this fifty-eight year old study, we would have a credible research study on the "educational effects of the use of microcomputers in schools."

What, if anything, does this story tell us? Are we to conclude that educators in the early thirties were naive and even blinded by this new machine and that they uncritically interpreted technical possibilities as educational possibilities? Or are we to conclude that the fate of typewriters in the curriculum reveals how educators have failed to take advantage of the pedagogic potential of the typewriter in areas such as reading, writing, visual arts, social studies, and even mathematics? Or should we perhaps take this story as an illustration of educators' quests for patent solutions to educational problems? Although I don't think we are in a position to answer these questions here and now, this story should draw our attention to the similarities between the introduction of typewriters into the curriculum in the early forties and the introduction of computers into the curriculum in the late eighties and early nineties. What is noticeable is not the similarities between the machines themselves but between the approaches and the expectations surrounding these technologies. It seems as if educators are in no better position to approach the present problem of new technology than they were over fifty years ago.

In recent years, computer technology has appeared on the educational scene with great force, often in the form of a harbinger of revolutionary changes in educational practice and in students' learning experiences, with the result that both schools and governments have taken actions to implement computers into the schools. The Government of Ontario, for instance, announced in 1984 that its provincial schools will have 300,000 microcomputers in operation in classrooms by 1988 and already in 1984 Drexel University in Philadelphia required each freshman to purchase his or her own microcomputer as a necessary study resource (Burch, 1984, p. 6). New computer departments are established in universities and funds are made available to those who in one way or another do research in the field of computer application. Teachers and parents are told that the computer will soon be able to deliver instruction more effectively than traditional methods ever did, that they will perform many of the teacher's tasks effortlessly and speedily. And we are told that computers will individualize instruction, offer students immediate feedback, promote social interaction, serve as infinitely patient tutors or scrupulous examiners, make learning fun, teach students to think, and so forth. And in the administrative realm, we are learn that computers can be used effectively for such things as record keeping, exam scoring and storing test items. It is argued that if teachers are less constrained by time-consuming, routine chores of classroom management, they can devote more of their time to individual students.

This is not to say, of course, that all educators are equally fascinated by this vision of this future curriculum-based curriculum. There are educators who refuse to assign any positive value to the presence of computers in the curriculum, and offer severe criticism of contemporary attitudes underlying the schools' quest for computers. These critics often speak of a "love affair" between schools and computers, about "computer mania," that schools are in the "grip of a computer obsession," or that "computer literacy has become the newest educational fad." One sort of criticism that has been raised against the schools' quest for computers is that the boom in school computers is in no way the result of an expressed need. These theorists point out that schools' departments, that traditionally move cautiously in adopting new teaching programs, and textbook publishers that usually take years to develop, evaluate, and produce new textbooks, throw all caution to the wind when it comes to acquiring computer hardware and software. They charge that schools are buying computers without knowing what to do with them when they arrive, just as if the thrill of discovery is the main goal. It is as if educators are saying: "Well, here we have something new and interesting, let's try to figure out what to do with these computers." These critics often express their worries over what will happen to issues such as trust, warmth and understanding in this world of speed, efficiency, and deductive logic.

It is clear that neither the wholesale uncritical adoption nor the wholesale critical rejection of computers in schools is an adequate response to the present situation. The appropriate approach is neither to embrace the computer revolution with an uncritical mind nor to reject computers as inhuman and alienating. The split of educators into two opposing groups -- one being fascinated by the presence of the computer in the curriculum, the other totally negative of this policy -- only threatens to create in education two "cultures" unable to discuss the meaning of computers in the curriculum. The first response reminds us too much of the so-called "law of the hammer." In *Computers in the Schools* (1982) Ronald G. Ragsdale points to this disturbing analogy:

> The statement of the law is (roughly) "If you give a hammer to a two-year old, suddenly a lot of things will need hammering." If you change "hammer" to "computer," "two-year-old" to "educator," and "hammering" to "computing," you have a description of the effect." (p. 2)

The present study is based on a number of assumptions. One is that the law of the hammer is indeed at work in contemporary response to the computer revolution. Another is that the problem of computers in the curriculum is part of another largely unexplored problem, namely the problem of coming pedagogically to terms with technology. The point is that the above "law" operates only on certain presuppositions. These presuppositions indicate that there seems to be a growing convergence of outlook among educators and the public that there is no conflict between the goals of modern education and the use of computers in the curriculum. This outlook is *instrumental* in nature and poses as such certain threats to educational practice.[1] Technology, in the form of machines or as scientific administrative management is increasingly shaping the lives and practices of educators and the threat of technology is that it becomes such a taken for granted aspect of our lives that it eludes our notice and ceases to evoke any serious questioning. In order to transcend the technological perspective educators need to understand the technological presuppositions at play in educational practice, the presuppositions which create the conditions for the positive response to computers we see around us.

---

[1] A number of contemporary philosophers, including Hannah Arendt, Hans Georg Gadamer, Jürgen Habermas and Richard Rorty, maintain that contemporary understanding of rationality as "technical control" threatens to degrade the notion of praxis exemplified in judgement and ethical/political reasoning.

Transcending the technological presuppositions, however, is only the first step. Educators need to come to terms with computer technology, but in a *pedagogic way*. As Douglas Sloan et. al., in *The Computer in Education: A Critical Perspective* (1984), point out, the central question about the place of computers in the curriculum is not whether one is for or against computers in education, but to define the human and educational criteria and priorities that can make a truly human use of the computer possible. Such a critical look will be the first step in beginning to make much needed distinctions between what is appropriate and what is inappropriate, between what is helpful and what is damaging, in the use and significance of the computer for different purposes and for different types and ages of students (p. 4). But what could this mean? What makes a response pedagogic? What is the ground upon which educators should make decisions about the use of computers in the curriculum? What kind of knowledge is going to help educators to make truly educational decisions about the use of computers in the curriculum? And finally, what kind of knowledge of computers is available to educators?

A. Perspectives on Computer Technology

Since 1980 there has been a fast growing literature on computers. A review of the literature reveals that the kind of knowledge of computers most commonly available is a highly utopian.The literature presents a futuristic vision of education and society where computers play a central role. Books and articles such as *Mindstorms: Children, Computers, and Powerful Ideas* (1980) by Seymour Papert, *The Electronic Cottage*

(1981) by Joseph Deken, "The Micros are Coming" (1980) by Inabeth Miller, "Classroom Computers: Beyond the 3 R's" (1981) by Fred Bell, "Classroom of the Future" (1981) by Jeff Nilson, "Classroom Computers" (1982) by Joseph Bourque, "Learning to Love the Computer" (1983) by Ian McLatchie, "The Fourth Revolution -- Computers and Learning" (1984) by Alfred Bork and "Computers in Education -- The Next Step" (1985) by J. Hebenstreit are examples of this literature. Bork's introductory words in the above article are perhaps typical for the messages of these authors:

> The theme of this paper is that we are on the verge of a major change in the way people learn. This change, driven by the personal computer, will affect all levels of education from earliest childhood through adult education. It will affect both education and training. It will be one of the few major historical changes in the way people learn. The impact of the computer in education will not produce an incremental change, a minor aberration on the current ways of learning, but will lead to entirely different learning systems. (p. 9)

Other authors write in the same vain. A great number of authors thus forecast that as computers become more integrated into commercial, academic, and social development, they will significantly affect work patterns, career plans and leisure time. As more work is computerized, manual functions become less relevant while reading and manipulating symbols becomes more important. As a result, the argument goes, attitudes towards information technology are changing. These shifts of understanding and attitude are part of an evolution towards the so-called information society, a society where information is the primary commodity of exchange. Hence, an understanding and ability to use this particular technological device, sometimes called "computer literacy," is seen as a prerequisite to long term prosperity of any society, which again requires individuals to learn new skills and upgrade old ones.

Another type of research, which goes back to the seventies, is experimental and comparative research on the *effectiveness* of computers when used as a part of different educational activities -- in mathematics, writing, problem solving -- in comparison to other, more traditional methods of teaching and learning (Alderman, 1978; Anderson, et.

al., 1975; Arsenty & Kieffer, 1975; Cox, 1974; Henry & Ramsett, 1978; Romaniuk, 1978). Most of these studies investigate the effectiveness of what has become known as computer-assisted learning (CAL), computer-based learning (CBL) or computer-based instruction (CBI). These studies tend to utilize the methodology of the positivistic sciences in order to measure the relative effects of the "independent variables," in this case a mode of instruction, on the "dependent variables," most often educational achievement measured in a standardized and quantified form. Perhaps the most interesting type of computer-assisted instruction is *computer simulations*. Computer simulations are of various kinds but their main purpose is to simulate highly complex real-life situations such as laboratory experiments for teaching in science courses, the market in economics and the classroom in education. Students are in most cases able to manipulate various "variables" and the program will respond to input in a way which is consistent with the situation.

The third category of literature is also fast growing. It contains theoretical accounts or analysis of computers, based on philosophical, psychological and sociological perspectives. This includes theoretical discussions on computers as ideology, the role of computers in the deskilling and reskilling of the labour force, the automation of clerical work, and studies on the psychic and social effects of using computers. Books like *What Computers Can't Do: The Limits of Artificial Intelligence* (1979) by Hubert L. Dreyfus, *Technics and Praxis* (1979) and *Existential Technics* (1983) by Don Ihde, *Pilgrim in the Microworld* (1983) by David Sudnow, *Hackers: Heroes of the Computer Revolution* (1984) by Steven Levy, *Techno-stress* (198[illegible]) by Craig Brod and *The Second Self: Computers and the Human Spirit* (1984) by Sherry Turkle, *Electric Language: A Philosophical Study of Word Processing* (1987) by Michael Heim, are all attempts to understand computers from philosophical, psychological and sociological points of view.

While all these approaches provide undoubtedly important insights into the meaning and significance of computer technology, none of them is particularly dedicated to educational practice or theorizing. None of them provide the educator with the rationals upon which educational decisions about computers can be made nor do they give any idea of what a pedagogic response to the present situation would look like. What this comes down to, in my view, is that neither the computer scientist, nor the psychologist or sociologist, have anything special to say about the educational significance of computers. One of the few exceptions to this is Seymour Papert's book *Mindstorms*, published in 1980. In that book Papert makes a noticeable attempt to legitimate pedagogically the massive penetration of computers into the curriculum. Papert's book is one of the most influential book in the field. It is also paradigmatic, in my view, for the hegemony of technological rationality. Thus it appears useful to focus upon Papert's ideas out and discuss them separately in Chapter II. First, however, I like to explicate what I take to be the primary educational problem concerning the use of computers in the curriculum.

B. The Nature of the Problem

Over the last decade or so, a growing number of educational theorists have been exploring alternative, non-positivistic approaches in education, giving new content to the meaning of educational theorizing and research. Among these theorists we find such names as M. Apple, D. Misgeld, H. Giroux, M. R. Grumet, H. M. Kliebard, W. F. Pinar and M. van Manen, to mention only a few. Common among these theorists is the tendency to look to continental philosophy for theoretical orientations which uphold a respect for the intents, activities and life-histories of students, teachers and educational administrators. For this purpose, some of them have turned to phenomenology and hermeneutics. Van Manen (1984a) writes:

> The increasing bureaucratization of pedagogic institutions and the technologizing effect of educational research and knowledge forms tends to erode our understanding and praxis of pedagogic competence in everyday

> life. It is in this sense that phenomenological research has radical consequences: it edifies serious thinking of what it means to live and act in concrete pedagogic situations and relations. (p. 19)

My claim is that there is a need for an alternative orientation in research and theorizing about computers in education, an orientation which seeks to go beyond the dominating technological and positivistic approach to the issue so prevalent in contemporary educational discourse. The danger is that we become so thrilled by the technical possiblilites of the computer that we tend to forget the limitations and other issues that are perhaps more pedagogically important. The challenge is, in my view, to raise more fundamental questions about the use of computers in the curriculum, including the fundamental pedagogic responsibilities of educators and the nature of their response to the issue. Or as Robert Burch in *Technology and Curriculum: Toward a Philosophical Perspective* (1984) points out, the task is not so much to "mount a direct argument against technological/calculative rationality in terms that its proponents would accept, as to transform thinking beyond such limits by extending the horizons of inquiry and deepening the level of our concerns" (pp. 2, 3). An essential part of that is to transform our way of questioning concerning computers. The point is that the way in which we ask questions about computers in education is part of our understanding of the phenomenon itself. What is called for is an orientation that does not shut off normative visions of what is good and just in educational practice. This is to suggest that the problem of applying computers to educational tasks is neither a technical nor a scientific problem. Or as Burch (1984) writes, "the computer scientist *as* computer scientist has nothing essential to say about computers" (p. 15). So, the first question addressed in this study will be: *How do we understand a computer application pedagogically?*

In this study I am proposing a return to Aristotle's *Ethics*, particularly his notion of *phronesis* (practical/ethical reasoning) as a model for understanding, in a pedagogic manner, the educational application of computers.[2] *Phronesis* is a form of reasoning that is concerned with ethical life, the choice of actions and which involves deliberation about the Good of means and ends. Education is fundamentally an ethical practice and the knowledge called for in educational situations is to a large extent a question of applied ethical knowledge. By formulating the question about the application of computers in education in terms of practical/ethical reasoning, I imply that the decisive thing is not the efficiency of the computer as a means to predefined ends (the technical notion of application) but the dialectical process of interaction between the self-understanding of educators (their *horizon* or *world*) and new tasks encountered in a particular historical situation.

This means that computer application is viewed as a *hermeneutic problem*, a problem of interpretation of meaning and of self-understanding. The task at hand is to interpret the meaning and significance of computers for the present situation in the light of our most fundamental presuppositions about the ends of educational practice -- including our conceptions of knowing, thinking and acting -- in order to disclose a larger and more comprehensive context through which educators understand the educational application of computers. Understanding in the hermeneutic sense is always guided by *wirkungsgeschtliches bewüsstsein*, a consciousness of historical finitude which endeavors to enlarge its horizon. The aim is to enlarge our self-understanding and help us to see beyond the technological framework and foster a kind of *thoughtfulness* required of educators and which may create the condition for a *tactful* use of computers in schools. As an application to our present situation, the task is to enlarge our self-understanding and help us to see beyond the technological framework. Only by elucidating the most comprehensive context for understanding a computer application, including the technological assumptions at work in our experience of the world, will we be able to put technology in its place. Practical reasoning about the educational application of computers is thus first and foremost the exercise of pedagogically sound judgements on a policy or a classroom level. It is an approach, a mode of theorizing, that aims at changing the way we think about technology and education and what we *are* rather than what we *have* in terms of objectified knowledge and principles.

---

[2] In the study I rely on H. G. Gadamer's (1982, 1984) interpretation of Aristotle's philosophy and his notion of *phronesis*. In Gadamer's interpretation of *phronesis* a historical dimension is added that is not found in Aristotle.

To view a computer application as a hermeneutical problem is to say that there is no prior knowledge of computers that allows us to make *a priori* judgements about the meaning and pedagogic significance of particular applications. What is required in practical reasoning about the educational application of computers is neither pure theoretical knowledge of computer technology nor technical know-how knowledge that allows one to apply means to predefined ends. What is at stake here is not a technical know-how of computers which allows educators to go about computerizing educational practice (which presupposes that computer is an end in itself) or a scientific knowledge of the efficiency of using computers compared to other means of educational practice (which presupposes that we can define clearly beforehand what the end of educational practice is). Neither is it simply a question of becoming experienced in the field of educational application of computer technology. Rather, a hermeneutic research means a *deliberation* about means and ends of educational practice, about the Good of the ends and the suitability of the means. This includes a *critical examination* of our most taken-for-granted presuppositions about educational issues. It means also *attentiveness* to the lived experience of using computers or being affected in any other way by this technology, which means that an interpretation of computers must become *phenomenological*. This means that what we are talking about is a research that comes closer to theorizing in the original Greek sense than modern research that speaks separately of "theory," "data collection," "observation," "interpretation of data" and so on.[3] Perhaps it would be more accurate to speak, not of a "study," "theory" or a "research," but *scholarship* (see van Manen, 1989, p. 28). Let us now turn our attention back to the study of word processing mentioned earlier and which takes up the bulk of this thesis. What is involved in such a study?

C. A Hermeneutic Phenomenological Study of Word Processing

In this study I have chosen one computer application to study in the way described above. This one I have chosen is word processing. Word processing is chosen for numerous reasons. The most important, though, is that word processing is not only a computer application a great number of people have come to know personally in the last ten years or so, but it is an application more and more educational theorists point to as an example of a computer application which is going to have a clear curriculum significance. For them, and for many other people as well, word processing has such obvious advantages over other writing instruments that it should not be very difficult to understand the educational significance of this application.

Another reason for studying word processing is found in the relationship between writing and literacy. No single concept originating in the discourse on computers in education has gained more publicity in recent years than the concept of "computer literacy." Word processors appear on the educational scene in the time of public debates about literacy in the United States and Canada, accompanied by great interest in information technology. Schools in North America are now charged with the responsibility for what is widely perceived as a "literacy crisis." Currently, popular press, mass circulation periodicals, scholarly papers, and government- and industrysponsored assessments and reports accuse the public educational system of failing to provide "functional literacy" and basic general education (de Castell & Luke, 1987, p. 415). In the shadow of this situation writing specialists praise the technical features of the word processor, such as electronic cutting and pasting, multiple files and windows as well as special application programs that are designed to give students immediate feedback to their writings: analysis of the structural features of their text, automatic prompts, and so on. We are also told that electronic cutting and pasting makes writing fun and easy by freeing the writer from the burden of rewriting and recopying. It has furthermore been suggested that word processors reduce the differences between the experience of writing and speaking. A primary element here, we are told, is speed. In contrast to ordinary handwriting, or typewriting for that matter, keyboard and screenwriting allows the person to write almost as fast as his or her thoughts flow, given that the writer has gained competence in using the keyboard. While writing on the keyboard and on the screen, the writer does not have to worry as much about the physical environment -- paper, ribbons -- as when writing with other instruments.

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[3] The Greek notion of theory and theorizing will be discussed further in Chapter Three.

How do we study a computer application like word processing -- the application of computers to writing -- pedagogically? A normal way to proceed would be to follow well established routes from the social sciences which would guide us through theory construction, the formulation and testing of hypotheses, the design of the research and the interpretation of the data. It would also be possible to subsume the question about word processing under a grand social theory which includes class conflicts, control over communication channels and cultural hegemony? Or one might want to adopt an experimental attitude and create an "experimental situation" in order to measure the differences in outcome between the "experimental group" and the "control group" which result from different treatments -- with and without a word processor? In this way one might be able to demonstrate the "effects" word processors have on writing skills or the effects of the word processor on writing, measured for instance in sentence length or the frequency of passive verbs. All these ways are undoubtedly well worth the effort. However, I believe that following conventional methodological routes in researching word processing may add to our knowledge of word processing in an empirical sense, but the question of the *meaning* of the notion of writing on the computer is already presumed in such endeavours.

It is now clear that this kind of research is not interested in the factual aspects of word processing, actual states of affairs. Questions of how many word processors there are, how they are used or where, fall aside the scope of this research. A hermeneutic phenomenological research is concerned with the question about the meaning and significance of word processing, the context through which word processing becomes meaningful to us in the first place, and with existential in opposition to technical possibilities of the computer. In other words, it is not the technical facilities *per se* that is the object of hermeneutic phenomenological study but the meaning and significance of these possiblilities in a wider personal and educational context. We need to question the conception of writing that such views as presented above presuppose. Is rewriting and recopying something we necessarily want to get rid of? And if we do, what will that mean for writing, if anything? A study of word processing may reveal something about writing that has eluded our notice or becomes actual only in relation to word processing.

An understanding of the meaning and significance of word processing thus clearly presupposes an *interpretive understanding* of writing. It is not just a question, though, of knowing beforehand the meaning of writing as handed down to us historically and then evaluate word processing simply in terms of that knowledge. Rather, the task is to think it through in unity, seeking an ever more meaningful questions to ask and more comprehensive understanding of word processing. On the one hand, this means to understand the meaning of writing *disclosed* by word processing. A study of word processing may reveal something about writing that has eluded our notice or becomes actual only in relation to word processing and it would be impossible to put word processing into place without a comprehensive understanding of meaning-context disclosed by this thing. On the other hand, the meaning-context disclosed by word processing must be contrasted and compared with what we know about writing, the meaning of writing handed down to us in and through the tradition to which we belong. There are likely to be meanings and practices that do not lend themselves easily to a computerization. There may be also be meanings and practices "favored" by the word processor. In this process it is necessary to become attentive also to the experience of writing, both with and without computers.

It should be remembered, however, that incompleteness and prejudices are part of all understanding. Thus, not only is hermeneutic phenomenology obliged to recognize its limits and tentative character in the face of an experience that is always deeper, richer, and more complex that what we have so far brought to light, but it is also obliged to recognize that with every disclosure, every unconcealment, we are also effecting a hiding. Interpretation tends to be an exaggeration. Like a painting, or a story, that draws sharper lines and colors than ordinary perception allows, interpretation draws attention in an exaggerated way to certain meanings. I do not propose to give an "objective" view of word processing, if objectivity is understood in the positivistic, methodological sense. Questions of meaning are in some sense always open. They can be understood better or more deeply, but they can not be closed as fully answered. Or as van Manen (1989) points out, "they will always remain the subject matter of the conversational relations of lived life, and they will need to be appropriated, in a personal way, by anyone who hopes to benefit from such insights" (p. 23).

D. The Organization of the Thesis

In this introduction chapter I have tried to provide a sense for what I see to be the most common questions asked concerning the role of computers in the curriculum and what kind of change in orientation, and hence in the very nature of thinking and questioning concerning the use of computers in schools, is necessary to come to terms with the present situation in an *educational* or *pedagogic way.* I have turned to Aristotle and his notion of practical/ethical reasoning (*phronesis*) as a model for understanding the problem of computers in education. I have also tried to show that from the auspices of practical/ethical reasoning, the problem of the educational application of computers becomes a *hermeneutic phenomenological* problem, that is, a problem of interpretation of meaning and of self-understanding.

In the next chapter, *The Question Concerning Technology*, I explore the meaning of the technological phenomenon. To question concerning the meaning of a computer application requires a fairly comprehensive understanding of the nature of technology. There is no way that we can simply decide to break from the technological framework to make a "fresh" start. We must carefully explore the nature of the technology, its scope and significance. By means of reflection and careful questioning concerning technology we must seek to understand the *essence* of technology. I shall argue in a Heideggerian manner that the instrumental notion of technology, which presents technology as means to predefined ends, does not disclose the truth of technology. Or as Heidegger (1977) puts it, the essence of technology is nothing technological. He also shows that the instrumental view of technology -- as means to an end -- is correct but yet not true (p. 6).

According to the Heideggerian perspective, technology is one way in which things-that-are (Heidegger's *Being*) show or manifest themselves. Technology is thus a mode of truth in the original sense of uncovering or revealing. The question is *what* modern technology reveals and *how* the technological assumptions reveal themselves in our orientation to things. Aside from giving insight into Heidegger's understanding of the difference between ancient and modern technology, I give two examples of how technological assumptions work in educational practice and theorizing. The first is the use of educational techniques in educational practice such as *behavioral objectives* and *programmed learning*. The second example is of theoretical nature and describes one of the most noticeable attempts to legitimate a massive penetration of computers into schools. This is of course Seymour Papert's *Mindstorms*. It should be noticed, though, that my discussion of Papert's ideas is not meant as a critical reading of his book. Rather, it is used as an occasion to raise questions about a given type of educational discourse and theorizing. These questions will be further discussed in Chapter III.

In Chapter III, *Pedagogy as a Pratical Human Science*, I discuss the notion of practical/ethical reasoning (*phronesis*) and the place of hermeneutic and phenomenology in this kind of study. I try to show that practical/ethical reasoning is not just an end-means rationality but is instead a special mode of understanding, one which does not shut off normative conceptions. It is argued that phronesis expresses the hermeneutic view of knowledge and understanding, the view that there is an inextricable relationship between the theoretical and the practical in our understanding and that all genuine understanding shapes our lives. I furthermore try to show that there is an essential difference between a technical and practical/ethical notion of application and that an educational application of computers must be understood in the latter sense. I also give an example of a contemporary educational theorist, van Manen, who attempts in his writings to elucidate the existential ground for practical reasoning in his concepts of "thoughtfulness" and "pedagogic tact." Finally, I suggest that the following themes must be addressed in any pedagogic account of computers: (1) the aims of education, (2) computers and language, (3) the computer-as-tutor, (4) human-world relations, and (5) the impact of the medium.

In Chapter IV, which I call *Methodological Reflections*, I will try to elucidate the ground for a hermeneutic phenomenological study of word processing. My attempt is to answer questions like: "What are the parameters of this kind of research?" "What is a life-world study?" "What does a hermeneutic phenomenological inquiry into word processing investigate?" "What kind of data does this kind of study rely on?" In addition to elucidating the hermeneutic and phenomenological nature of the study, I explain some of the main differences between the methodology of the positivistic social sciences and the kind of research I am conducting. Included in this discussion is the importance of questioning in hermeneutic phenomenological research, the significance of writing in this kind of research and the role of anecdotes in this kind of writing.

In Chapter V, *Understanding Word Processing*, I undertake a reflection on word processing in the way described earlier. As pointed out then, the task is to establish a "conversational relationship" to the question of word processing, seeking an ever more radical and more comprehensive context of understanding by questioning and responding to questions raised by others. The chapter on word processing will be divided into the following six main sections: (1) the significance of written language, (2) writing is physical, (3) writing means finding a topic, (4) writing is composing, (5) writing is revising, and (6) my personal experience of word processing. These headings, particularly (2) to (5), can be looked at as themes originating in the literature on writing and computers. Each theme consists of a presentation of ideas and truth-claims about a given function of the word processor, a response to these ideas based on a reflection on the meaning of writing and the experience of writing, and a short conclusion. Number (1) explores the meaning and significance of language, especially written language, and (6) is a short description of my own experience of word processing which constitutes one of the sources I rely on in this study.

In Chapter VI, *Toward a Pedagogy of Word Processing*, the main conclusions of Chapter V will be presented and discussed under four headings which are indirectly based on the existential themes discussed in Chapter III. These sections are: (1) word processing and language use, (2) the quest for efficiency and control, (3), word processing and automation, and (4) literacy in information society. The discussion of each section is meant to point to, albeit in broad terms, the conditions for a pedagogic use of word processors. Particular attention will be given to problems pertaining to the meaning of literacy, particularly the kind of literacy I call *critical literacy*. I believe that literacy is a basic notion in educational practice and discourse and that an understanding of the meaning and significance of word processing, and writing, must be based on an understanding of the meaning and significance of literacy. Finally, suggestions about further research are made.

Chapter VII, called *Re-opening the Question*, concludes the discussion as a whole. In this chapter I discuss briefly the presence of computers in the curriculum, possibilities and limiations. I argue that computers should not have any priorities in the curriculum over other educational technologies or practices. What we need is not more computers but a *balanced curriculum* that gives students a wide range of rich and meaningful learning experiences.

Chapter II

THE QUESTION CONCERNING TECHNOLOGY

In the previous chapter I argued that the most important question concerning the use of computers in the curriculum is not a technical or a scientific question, but a pedagogic one. Accordingly, I suggested that educators need to develop a pedagogic/conversational relationship to computers (neither to accept them uncritically nor reject them as inhuman). I also suggested that the question about computers in the curriculum was part of a more fundamental question: the question about the possibility of a pedagogy of technology. Is a pedagogy of technology possible or do the concepts pedagogy and technology belong to incommensurable forms of life? The question about the possibility of a pedagogy of technology requires a fairly comprehensive grasp of the nature of technology as well as of pedagogy. If left undefined, the technological presupposition would continue to have a free play in our experience and bind us to its framework while we might mistakenly conceive of our approach or thinking as "pedagogic" or "educational." In this chapter I shall explore the notion of technology, particularly the Heideggerian notion of technology as a mode of truth, and give examples of technological assumptions at work in educational practice and theorizing.

A. The Technological Phenomenon

It was pointed out in the previous chapter that the problem of computers in the curriculum was not to find uses for them, to find ways to computerize educational practices. The discussion of Papert's *Mindstorms* served the purpose of showing that the question of the use of computers in schools is only partially a question of tools. I indicated that the issue of tools is much more complex than one would expect at first. One cannot view the use of tools in isolation. To the being of any tool, Heidegger points out in *Being and Time* (1962) there always belongs a world.

> Taken strictly, there "is" no such thing as an equipment. To the being of any equipment there always belongs a totality of equipment, in which it can be this equipment that it is. Equipment is essentially "something in order to..." ["*etwas um-zu*..."]. A totality of equipment is constituted by various ways of the "in-order-to," such as serviceability, conductiveness, usability, manipulability." (p. 97)

Today there is a general feeling that technology is the controlling power in our age, affecting virtually all aspects of our lives. What is confusing, however, is that while most peope are aware of the significance of science and technology for our age and its impact on our lives, few phenomena are more easily misunderstood than technology. The reason is first and foremost that whenever we think of technology we tend to think about particular tools and instruments. But as we shall see this is a mistake. For although technology certainly has its roots in the machine, and the machine still continues to be at the heart of the technological problem, technique has now become almost completely independent of the machine, which is evident in the proliferation of the various human technologies such as behavior modification. It seems as if we are confronted here with one version of the trees/forest blindness. In the same way as we do not see the forest because of the trees, we have difficulties in seeing technology in the middle of all the tools and machines that surround us. The technological phenomenon, however, is larger than the totality of tools and instruments.

In his controversial book, *The Technological Society* (1964), Jacques Ellul begins by defining technique as "the totality of methods rationally arrived at and having absolute efficiency (for a given stage of development) in every field of human activity" (p. xxv). Ellul argues that because of the proliferation of techniques in modern times, both in number and in kind, technology has acquired the power to determine the ideas, beliefs, and myths of modern man to such an extent that all activities are now more or less situated within the technical totality. The technological totality, according to Ellul, has largely replaced the former natural milieu. So for Ellul modern technology is not an isolated factor in society, but a total attitude or, as Heidegger would call it, a comprehensive way of being-in-the-world.

The ambiguity of the notion of technology points to the need to seek a deeper and more comprehensive understanding of this phenomenon. This is all the more important when it is considered that today we find ourselves in a situation in which there exists an almost servile worship of techniques of all sorts and in which almost every aspect of life is becoming a question of technique. The vast range of "How-to-do" manuals that regularly occupy a large portion of shelf-space in bookstores speak to this phenomenon. We turn to books to consult them about how to rear our children, how "make" friends, love, teach, think, or whatever we can imagine of. As William Barrett, in *The Illusion of Technique* (1979) has pointed out, the underlying assumption is that we "have only to find the right method, the definite procedure, and all problems in life must yield before it" (p. 25). Hence we need to ask about the nature of technology. What is technology in its essence? applied science? efficient means to predefined ends? or a mode of truth?

Martin Heidegger: Technology as Truth

In *The Question Concerning Technology and Other Essays* (1977) Martin Heidegger writes that we shall be questioning technology, and in so doing we should like to prepare a free relationship to it. He then adds that this relationship will be free only if it opens our human existence to the essence of technology (p. 3). So what Heidegger proposes to give us is an understanding of the *essence* of technology, the ontology of the technological phenomenon. He argues that as long as we attempt to understand technology as means to ends then we fail to disclose the essence of technology. The instrumental definition of technology is correct but yet not true (p. 6). He also questioned the view of technology as applied science. Technology, in essence, is indeed the condition for the possibility of modern sciences.[4] Technology is not merely one characteristic of our culture, but is rather the very nature of our age, pervading everything there is -- from the sciences to industry and to personal life. According to Heidegger's philosophy, technology is the contemporary mode of revealing things-that-are, the way the world becomes intelligible.

. Basic to Heidegger's conception of Man as *Dasein*. Man is more than just another "thing." The human being, or *Dasein* as Heidegger prefers to name the existence of human being, is *being-in-the-world*. More fundamentally, *Dasein* is the being which discloses the world. "Man alone is thus the being to whom the world, and all the sorts of things in it -- such as nature, artifacts, and persons -- can reveal themselves in their own significance" (Hood, 1983, p. 353). Heidegger's "fundamental ontology" is therefore meant to give attention to the many different modes in which man exists and encounters things. *World* must not be understood simply as the totality of things present to the person but rather as the *way* things are actively taken up on a pre-reflective level where the human being actively encounter things. This is the level which Heidegger in *Being and Time* calls "ready-to-hand" and Husserl, in his *Crisis*, named the *Lebenswelt* (life-world). This primary orientation to things opens "the world" for humans, which means that the world is largely an equipment totality of beings grounded in human concern. Equipment, accordingly, is essential to the human being's being. So, in contrast to earlier (say Aristotelian) conceptions of technology, which view technology as a human arrangement of technics -- tools, machines, materials, etc. -- to serve the attainment of human needs, Heidegger sees technology as a part of the existential structure of man's being, "technology is grounded in man" (Hood, 1983, p. 352).

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[4] I think it would beyond the present discussion to explicate in details Heidegger's conception of science. A number of authors have attempted to do so, including Harold Alderman in "Heidegger's Critique of Science and Technology" (1978), William Barrett in *The Illusion of Technique* (1979) and Webster F. Hood in "The Aristotelian Versus the Heideggerian Approach to the Problem of Technology" (1982).

Heidegger argues that we can only understand modern technology if we first understand the Greek term *techne*. Originally, the word *techne* meant the art of making, and more fundamentally, the way in which beings can be made manifest. Heidegger thus emphasises the connection between the Greek terms *techne* and *poiesis* (bringing-forth and revealed). Yet unlike those virtues relating to eternal things or political life, *techne* was of low value as the revelation of the changeable as changed by man (Burch, 1984, p.19). Modern technology, according to this view, is a form of "discovery" like *techne*, but not in the same sense. According to Heidegger, it becomes the fate of contemporary technology to forget the *poiesis* of *physis* -- the responsible uncovering that is in harmony with Being itself.[5] Accordingly, the fundamental difference between the original meaning of *techne* and modern technology is that the first is responsible and true to the nature of things themselves whereas the second is domineering and challenging. Alderman (1978) explains Heidegger's thought in the following way:

> Consider, for instance, the difference between an old bridge built over the Rhine and a modern power plant that uses the Rhine as a source of energy. The bridge, which is built into the river, lets the Rhine be itself and brings forward its essential character by bridging its separate banks. The hydroelectric plan, however, builds the Rhine into the plant itself so that the river becomes merely part of the machinery needed to generate electricity. The riverly character of the river is denied as it becomes a mere resource used to turn the generators. The mechanical force of the river is transformed into electrical power. (p. 48)

The main difference between pre-scientific and contemporary scientific technologies, according to Heidegger, lies in the absence of the illusion of domination and the abscence of the necessary attempts of domination in the earlier technologies. In pre-scientific technologies the human being was a being "within" nature, whereas in contemporary scientific technology the human being sees him or herself as a being "over" nature. The older technologies do not presuppose a ground plan of the sciences or the power of humans as the determiners of Being, and they are therefore closer to the sense of *physis* as a mode of letting things be (Alderman, 1978, p. 48). Modern technology treats everything with "objectivity" and technologists are regularly expected, and expect themselves to be able to impose order on all data, to "process" every sort of entity, non-human and human alike, and to devise solutions for every kind of problem. "Reality" is made to conform to technological constructs; it is produced, calculated, measured and transformed. Technology is forever getting things under control.

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[5] *Being* is of course a central concept in Heidegger's philosophy but it is difficult to define. Being is something like "reality," the most comprehensive context through which things-that-are reveal themselves as what they are.

This is the truth of technology. Modern technology in its essence is a "challenging revealing" for it "sets up" everything, imposing upon it a demand that seizes and requisitions it for use. The essence of technology, Heidegger says, is "Enframing" (*das Ge-stell*). Under the domination of this challenging revealing, nothing is allowed to appear as it is in itself. Technology approaches nature as a repository of resources, containing energies that are unlocked by technology, accumulated, stored, transformed, and utilized in the production of goods. A being thus technologically uncovered stands in a position to be disposed of in a productive process, and the beings of technology are nothing more than this passive stance of waiting to be used by humans.

So, central to Heidegger's philosophy of technology is the Greek notion of truth as *Aletheia*. By truth Heidegger does not mean the traditional notion of a correspondence between a statement and a fact, or between an ideal content and the object of consciousness. It is not judgement which is basic, according to Heidegger, but that which makes the judgement possible. Truth means something that has emerged from the hidden into the open. The truth of any thing is also inevitably conditioned by that thing's insertion n the totality of things known, the epoch's original conception of truth and a way of approaching things in general. The historicity of *Dasein* reveals itself in the fact that Being -- the most comprehensive context in which things (beings) show themselves -- manifests itself continally anew. Today Being reveals itself through the framework of technology and science and through the kind of thinking that insists on grasping reality through imposed conceptual structures and nothing is allowed to be as it is. This conception of technology as a mode of revealing, a mode of truth, shows how silly it would be for anyone to announce that he or she is "against" technology. That could only mean that he or she is against our historical situation. As William Barrett (1979) puts it, the framework does not belong to the world of "ontic" fact but of "ontological" possibilities. It is a project into which humankind has entered step by step and to which it is now committed (p. 229). The question is rather whether we shall be able to see around technology or through it to grasp other modes of being. So long as we continue to look for solutions in the newest technological invention we are unconcerned to ask what the presuppositions of this technological world are and how they bind us to its framework. Already these presuppositions are so much part of the way we conduct our lives that we have become unconscious of them. We may eventually become so enclosed in them that we cannot even think of any other way of thinking than technical thinking. This will be the point, as Barrett (1979) points out, at which we shall have turned all our questions over to the think-tanks as problems of human engineering (p. 223).

The technological man, however, denies that technology is anything so mysterious as a mode of making manifest. To the technocratic mind, technology is simply the means-structure in an end-means relationship. Ends are "chosen" in some way (how or why?), and technology merely expresses the most efficient way to produce those ends. Technology is in this view only a set of techniques used by humans to achieve some goal or other. What remains always hidden from the technological understanding of technology is that this means-end relationship has itself obviously come to determine in its own way a doctrine of Being. In the technological view there are only two possibilities of Being: beings are either ends or means and ends become means to yet further ends posited by humans. In modern society, however, this notion of technology as means to ends looses much of the sense it had in the times of Aristotle. The diffusion of technology since the nineteenth century has become so great that almost nothing in culture remains outside it. It becomes more and more difficult to decide what are the ends and what is the means in the total arrangement we call technology, and this is the condition upon which the supposed neutrality of technology is based. Today all things are being swept together into a vast network in which their only meaning lies in their being available to serve some end, which will itself be directed towards getting everything under control.

The essence of technology is danger, says Heidegger. However, the greatest danger of technology is not that of ecological catastrophe but rather that the very nature of humans will be perverted to such a degree that they no longer understand their relation to Being and ultimately become another thing to be explained and controlled (Fandozzi, 1982, p. 75). The threat of technology and technological rationality is that this mode of showing becomes so dominant that we no longer see beyond it and lose sight of other meanings and significances of human life. Everything becomes means to predefined ends, which again become further means to still other ends. In *The Illusion of Technique* (1979) William Barrett explains:

> we can imagine the technical order operating at maximal and humane efficiency such that abundant and pleasant leisure would be at the disposal of all -- and the danger would still be there. The system would enclose us within it all too comfortably and, alas, all too completely. The open spaces become fewer in which we can draw breath and see beyond the enclosing framework itself. A certain poetic dimension of life shrivels. We do not walk the earth and look up at the stars; we prefer to see them on photographic plates. And as for freedom itself, we tend to confuse it with the will to power and our frenzied manipulation of objects. (p. 244)

In the course of his life Heidegger became increasingly sceptical of the power of traditional philosophy to see beyond the technological framework. So, for Heidegger the escape from the hegemony of technology is not found in philosophy or science, as someone would expect, but in poetry. The truth of poetry is something quite different from the truth of technology. As Barrett (1979) points out, in the contemporary technical era, when everything becomes an instrument at the service of the will, language is manipulated as a calculus (p. 264). The significance of poetry is that it resists this will and reveals a more fundamental dimension of language which, for hermeneutical philosophers, constitutes a major condition for human existence. As Barrett (1979) comments, Heidegger is struggling to recall poetry to its primal dwelling among us on this earth and under this sky. If poetry does not touch the daily round of our existence somewhere or other, then we ourselves have become homeless on this earth. The figure of the poet thus represents a dimension of our human being, the loss of which would leave the civilized person an emotional cripple. Barrett (1979) asks and answers:

> What is the difference between a poet and technician? The poet walking in the woods loses himself in the rapture of its presence; the technician calculates the bulldozers that will be needed to level it. At some point in our life we have to follow the poet in the "wise passiveness," to learn to let be, or we remain forever caught in the nervous clutch of our willfulness. (p. 247)

The question then arises, what do we expect of educators? Do educators have to choose between instrumental or calculative rationality of the technician and the wise passivity of the poet?[6] Where does pedagogy enter into this picture? Is there a "rationality" proper to the tasks educators have to deal with in situations like this?

Technological Rationality in Education

Heidegger's conception of technology, particularly the notion of "Enframing" (*Gestell*) raises immediately a number of questions concerning the nature of thinking. In times when instrumental reason has such hegemony that no other modes of thinking are taken seriously Heidegger's philosphy is of special importance. Heidegger distinguishes between "calculative" and "meditative" thinking, sometimes called by Heidegger *essential* as opposed to *exact* thinking (1979). Like technology in general, calculative thought places itself under compulsion to master everything. It is directed toward goals, purposes and aims at getting results through planning, research and organization. Essential thinking, on the other hand, is attuned to Being in a way which is beyond the scope of the object-orientation of calculative thinking. This attunement calls for a mode of thinking which carries within itself a certain gratitude, a calm attentiveness which is akin to poetry. Essential thinking is a *response* to Being, a thankful receptivity to those forces which make us historical beings and which offer us the possibility of an authentic future.

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[6] It should be made clear at the outset that by "poetic" Heidegger does not refer solely to poetry even if he finds in poetry the relationship to language and thinking that he sees as necessary to overcome the nihililism of technology. Thinking of Being is poetizing (*Dichten*), not in the sense of poetry but in the sense of "orginative" thinking, that is, thinking that brings new light and new meaning to the things upon which it is exercised. This notion of a poetic dimension of language is also found in van Manen's phenomenological pedagogy and will be discussed further in Chapter IV under the section, *Hermeneutic Phenomenological Writing*.

The point is that instrumental rationality is never simply an efficient means to pre-defined ends. It is a mode of showing, a mode of truth with transformative power. The proliferation of educational technologies, based on scientific principles and technological inventions, is paradigmatic for this meaning of technology. Two primary examples are found in *behavioral objectives* and *programmed learning*. Educational technologists and advocates of competence-based teaching-learning promise to increase efficiency in education by using behavioral technologies and programmed learning in schools, thus providing for greater accountability on their part. Educational technologies, as Dieter Misgeld (1983) suggests, are based on the ground-rule of sufficiently externalizing human actions and interactions so that action and interaction become analyzable and countable with reference to standard conceptions of achievement (p. 201). A first step, for instance, in preparing behavioral objectives is to determine what kind of learning outcomes are devised for every unit of instruction. But as Misgeld shows, far from being a neutral supplement to educational practice, behavioral objectives and programmed learning are part of educational technologies which transform teaching and learning into management tasks (p. 205). According to Misgeld, these technologies pose a threat to the communicative structure of the teachers-student relation. Misgeld (1983) writes:

> The type of integration of all activities intended by models of programmed learning can only be meant as the organization of activities into a system controlled with reference to notions of administrative accountability.

> Teachers in particular are placed into the position of being anonymous dispensers of public goods with little opportunity to invest something of themselves into their work. In fact, one can conceive training programs on this basis which are no longer geared at all to education as such. They no longer begin from the basis that there is an interesting subject matter, attracting some people more than others, and which they want to teach because they feel people should know about it. Nor does one need a genuine interest in youth and young people as people whose growth matters, in some way, to those who teach them. (p. 211)

Technological assumptions are also found in educational theorizing and research and in the previous chapter I pointed out that much of contemporary educational research and theorizing about computers in the curriculum is based on a strong technological orientation. The best known example is *Mindstorms* by Seymour Papert. Papert's book was first published in 1980 and has since become a classic in the literature on computers in the curriculum. No other single book has had greater impact on the educational discourse about computers than Papert's book. From the beginning it was Papert's intention to provide an educational or philosophical legitimation for the use of computers in schools. His intention was to describe:

> the ways in which the computer presence could contribute to mental processes not only instrumentally but in more essential, conceptual ways, influencing how people think even when they are far removed from the physical contact with a computer. (p. 4)

Later Papert writes that his book is based on his conviction that users of very powerful computational technology and computational ideas can provide children with "new possibilities, for learning, thinking, and growing emotionally as well as cognitively" (pp. 17, 18). In his book, Papert raises a number of issues that have become central themes in the debate about the role of computers in the curriculum. Now let us briefly review the most important themes and the criticism that has been levelled against the pedagogic plan proposed in Papert's book.

Central to Papert's theory of how computers may revolutionarize learning is his idea of "*Mathland*," a computer-rich environment where children are allowed free access to computers. It is an environment in which mathematics would become a natural vocabulary, with the aim of bringing children into a more humanistic relationship with mathematics (p. 30).[7] Papert argues that in our culture school mathematics is paradigmatic of "dissociated learning," learning where children are forced to deal with highly abstract symbols in a totally alienating way. The first of the two basic ideas behind Mathland is that it is possible to design a computer language so that learning to communicate mathematically with the computer becomes "more like learning French by living in France than like trying to learn it through the unnatural process of American foreign-language instruction in classrooms" (p. 6). The second main assumption is that learning to communicate with a computer may change the way other learning takes place. According to Papert the computer is an entity that speaks mathematically and alphabetically. He says, "we are learning how to make computers with which children love to communicate" (p. 6).

Another theoretical concept in Papert's discussion on the pedagogic use of computers is what he calls "*body syntonic*." Papert finds a theoretical interpretation to this concept in the Piagetian theory of learning. By "Piagetian learning" he is referring to the idea that knowing is an active process: to know an object is to act upon it and transform it. With this concept he wants to emphasize the intimate relationship between the development of cognition in children and their sense and knowledge about their own bodies (p. 63). Papert recalls how through an intense involvement with automobiles and a fascination with machines, his experience provided him with powerful mathematical ideas, probably more than anything he learned in elementary school. The gears he actually felt "in love with" served as a model for otherwise highly abstract and difficult ideas:

> The gear can be used to illustrate many powerful ideas, such as groups or relative motion. But it does more than this. As well as connecting with the formal knowledge of mathematics, it also connects with the "body knowledge," the sensorimotor schemata of a child. You can be the gear, you

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[7] Papert made it clear from the beginning that his ideas about the educational use of computers presupposed a massive penetration of computers into students' lives (p. 23). For Papert the question was not whether this would happen, simply when.

> can understand how it turns by projecting yourself into its place and turning with it. It is this double relationship -- both abstract and sensory -- that gives the gear the power to carry powerful mathematics into the mind. (p. viii)

Papert acknowledges the gears have their limitations as a model for learning, but these can be overcome with the new machine, that is, with computers. As Papert says, "the computer is the Proteus of machines. Its essence is its universality, its power to simulate. Because it can take on a thousand forms and can serve a thousand functions, it can appeal to a thousand tastes" (p. viii).

This was Papert's main intention behind the design of the programming language LOGO and the "Turtle." According to Papert, LOGO and the Turtle allow children to explore naturally domains of knowledge through exploration and manipulation of a concrete object and their own ideas. The computer obliges the child to externalize intuitive expectations, thus making them more obtrusive and more accessible to reflection (p. 145). And getting to know the formal language of the computer allows the child's pre-reflective intuitions to be informed by the computer's powerful procedural knowledge. In brief, the process of programming the computer through LOGO and the Turtle concretizes and personalizes knowledge at the formal level and enables children to explore how they themselves think. This process turns children into "epistemologists." In programming, Papert says, the learner realizes that it is possible to build large intellectual systems without ever making a step that cannot be comprehended. So, at the heart of Papert's vision of Mathland is the view that when a child learns to program, the experience of learning is transformed. The child becomes more active and self-directed and the knowledge that he or she acquires is useful for a recognizable personal purpose. It is a form of learning without a curriculum (p. 31). By acting upon, and manipulating the knowledge at hand, the knowledge becomes a source of personal power:

> Each new idea in Turtle geometry opened new possibilities for action and could therefore be experienced as a source of personal power. With new commands such as SET VELOCITY and CHANGE VELOCITY, learners can set things into motion and produce designs of ever-changing shapes and size. They now have even more personal power and a sense of "owning"

> dynamics. They can do computer animation -- there is a new, personal relationship to what they see on television or in a pinball gallery. (p. 129).

Similarly, Papert objects to the suggestion that computers favor routine or mechanical learning and that by adopting the computer as a mode for thinking, children will eventually come to think mechanically themselves. He argues that by deliberately learning to imitate mechanical thinking, the learner becomes able to articulate what mechanical thinking is not (p. 27). So, instead of narrowing their cognitive outlook, Papert says, the computer experience can lead to a greater confidence about the ability to choose a cognitive style that suits the learning problem and thus lead to a new degree of intellectual sophistication.

Papert seeks to demonstrate his ideas with real-life examples. One of his classroom observations was a student, a thirteen-year-old girl named Jenny. Jenny, an average student, was a student in an experimental class where the children were to work on what they called "computer poetry," a project where the computer was programmed to generate sentences to use in poetry. Papert explains that Jenny had never understood the difference between nouns and verbs and adverbs. One day, Papert writes, Jenny came in very excited and told that now she knew why we have nouns and verbs. Papert explained that as she tried to get the computer to generate poetry, something remarkable happened:

> She found herself classifying word into categories, not because she had been told she had to but because she needed to. In order to "teach" her computer to make strings of word that would look like English, she had to "teach" it to choose words of an appropriate class. What she learned about grammar from this experience with a machine was anything but mechanical or routine. Her learning was deep and meaningful. (p. 49)

In other words, it was apparent to Papert that this girl's difficulties with grammar were not due to an inability to work with logical categories. Rather, she had simply seen no purpose in the enterprise. She had not been able to make any sense of what grammar was about in the sense of what it might be for. Papert concludes that Jenny not only "understood" grammar, she changed her relationship to it. It was "hers," and during her year with the computer, incidents like this helped Jenny change her image of herself. Papert reports that Jenny's performance changed too; her previously low to average grades became "straight A's" for her remaining years of school. She learned that she could be "a brain after all" (p. 50).

Deborah, a sixth grader who had problems with school learning, was another observation. At first, when Deborah was "introduced" to the world of screen Turtle and showed how she could obey the commands FORWARD, LEFT, RIGHT, she found it frightening, "the reaction she had to most of what she did at school" (p. 118). And in the first few hours of Turtle work she developed a disturbing degree of dependence on the instructor, constantly asking for reassurance before taking the smallest exploratory step. A turning point, however, came when Deborah decided to restrict her Turtle commands, and to create a microworld within the microworld of Turtle commands. She allowed herself only one turning command: RIGHT 30. To turn the Turtle through 90 degrees, she would repeat RIGHT 30 three times and would obtain the effect of LEFT 30 by repeating it eleven times:

> To an onlooker it might seem tedious to obtain simple effect in such complicated ways. But for Deborah it was exciting to be able to construct her own microworld and to discover how much she could do within its rigid constraints. She no longer asked permission to explore. And one day, when the teacher offered to show her a "simpler way" to achieve an effect, she listened patiently and said, "I don't think I'll do it that way." (p. 118)

For Papert, this story is a good example of how children construct their own personal microworlds, in this case the "RIGHT 30 world." Papert remarks that the encounter with the computer gave her a sense of "confidence that showed itself not only in more ambitious Turtle projects but in her relationship to everything else she did in the school" (p. 119). He then concludes with the bold statement that he would like to see in Deborah's experience a small recapitulation of how the success of such thinkers as Copernicus and Galileo allowed people to break away from superstitious dependencies that had nothing to do with physics. In both cases, the success of a mathematical theory served more than an instrument role: It served as an affirmation of the power of ideas and the power of mind (p. 119).

Computer science, Papert explains, is less a science of computers than it is a science of descriptions and descriptive languages. Papert suggests that programming, and knowledge of formal languages, offer the child a new and powerful descriptive language for thinking, having much in common with scientific thinking, and that it will undoubtedly be "carried into the general culture" and have a "particular effect on our language for describing ourselves and our learning." Papert writes:

> In a computer-rich world, computer languages that simultaneously provide a means of control over the computer and offer new and powerful descriptive languages for thinking will undoubtedly be carried into the general culture. They will have a particular effect on our language for describing ourselves and our learning. To some extent this has already occurred. It is not uncommon for people with no knowledge of computers to use such concepts as "input," "output," and "feedback" to describe their own mental processes. (p. 98)

As Papert explains, programming language is like a natural, human language in that it favors certain metaphors, images, and way of thinking (p. 34). And what gives computer languages their special significance, according to Papert, is the fact that our culture is relatively poor in models of systematic procedures. Against the possible objection that computers will eventually foster instrumental thinking Papert argues that by deliberately learning to imitate mechanical thinking the learner becomes able to articulate what mechanical thinking is *not* (p. 27). So, instead of narrowing their cognitive outlook, the experience of computers will eventually lead to a greater confidence about the ability to choose a cognitive style that suits the problem at hand and thus lead to a new degree of intellectual sophistication. Papert states:

> By providing a very concrete, down-to-earth model of a particular style of thinking, work with the computer can make it easier to understand that there is such a thing as a "style of thinking." And giving children the opportunity to choose one style or another provides an opportunity to develop the skill necessary to choose between styles. Thus instead of inducing mechanical thinking, contact with computers could turn out to be the best conceivable antidote to it. (p. 27)

Papert's view of the role of computers in humanistic education is perhaps best described with respect to his "debugging philosophy." In programming the computer, Papert says, children usually have to make several unsuccessful attempts before they manage to make the computer do what they want it to do. In order to "fix" what has gone wrong, the child must first understand both the problem being solved (the desired outcome), and the actual occurrence (what really happened). As a result, while "debugging" a program, the learner self-consciously examines his or her own understanding of the knowledge structure under development. "Where is the bug in the program?" In such cases, Papert continues, one does not judge by standards like "right -- you get a good grade" and "wrong -- you get a bad grade." Rather, one asks the question: "How can I fix it?" (p. 101). This experience, this systematic encounter with errors and the process of debugging them, has revolutionary import for education, according to Papert. It flies in the face of our cultural fear of errors. For school teachers who feel that errors are bad the last thing one want to do is to pore over them, dwell on them or think about them. In contrast,

> The debugging philosophy suggests an opposite attitude. Errors benefit us because they lead to study what happened, to understand what went wrong, and, through understanding, to fix it. Experience with computer programming leads children more effectively than other activities to "believe in" debugging. (p. 114)

Papert makes here a pedagogic observation: A debugging makes children more tolerant towards their errors, and in the LOGO environment, children learn that the teacher too is a learner and that everyone learns from mistakes (p. 114). Furthermore, LOGO classrooms, says Papert, allow for a true collaboration between students and the teacher; together they can try to get the computer to do this or that and figure out bugs together.

B. Conclusion

What kind of an answer does Papert give to the question about computers in the curriculum? It is clear that Papert's fascination with computer technology is almost without limits. The book visualizes a computer-rich culture where children learn meaningfully and joyfully the most important skills, where they grow cognitively and emotionally and where the relationship between students and teachers is transformed in a way that makes education a truly collaborative endeavor. But is this a plausible view of the potential influences of computers? Does Papert's view of language satisfy us? Is it convincing when he tells us that the experience of computers will serve as an antidote to instrumental reasoning? What conception of learning and education underlie Papert's view of the role of computers in education? Finally, what do Papert's stories about children and computers tell us about the pedagogic significance of computers?

My criticism of Papert's book is not aimed at correcting his faults in a way that would be acceptable to Papert himself. Rather, it has to do with his most fundamental presuppositions, especially the technological vision that runs throughout his entire book. I propose to question the whole interpretive context, the context that makes sense of his total enterprise and particularly his instrumental notion of rationality. It is on the level of his basic assumptions that we begin to see the force of his technological orientation, the assumptions that allows him to speak of a "love affair" between children and machines, and that makes him talk of formal languages (as powerful framework for children's thinking or of educational interactions) that are organized around the discussion of "bugs." For those, however, who tend to associate love with interpersonal relationships, who see formal languages as significantly poorer in their communicative functions than everyday language, and who want to promote educational experiences in directions other than toward "problem fixing," all this must sound terribly narrow minded. In the next chapter I shall a present a non-technological view of application, based on the Aristotelian notion of practical/ethical reasoning (*phronesis*). I shall furthermore suggest few existential themes which I think any pedagogic approach to computers must consider.

Chapter III

PEDAGOGY AS A PRACTICAL HUMAN SCIENCE

Although we recognize the need for a more artistic emphasis in the curriculum it cannot be denied that education is asked to accomplish something different from what is expected of poetry. Educators always finds themselves in an "acting situation" and they are always obliged to use ethical knowledge in the experiences of this or that concrete situation. Decisions have to be made about the ends of the educational practice, the means appropriate to these ends and the means available in particular situations. Decisions have also to be made about *when* and *how* certain means are to be put into practice. This means that educators need to come to terms with the question of technology in a way that goes beyond the poetic response of Heidegger, even if educators must always remain attentive to the poetic dimension of pedagogic life. Educators must ask themselves how techniques and tools available to them can be used educationally or pedagogically.

A. The Notion of *Phronesis*

The notion of a pedagogic discipline has a long history in Western thought. It was the merit of Aristotle, according to the German philosopher Hans Georg Gadamer (1982, 1984), to distinguish between *techne* (technique), *episteme* (science) and *phronesis* (practical reason or practical wisdom). Aristotle contrasted *phronesis* with both *episteme* and *techne*. According to Aristotle each of the sciences embodies its own kind of rationality and *phronesis* is a form of reasoning that is concerned with ethical life, the choice of actions and which involves deliberation. It deals, like *techne*, with that which is variable, means and ends, and about which there can be differing opinions (*doxai*), but in a different way. In *Beyond Objectivism and Relativism* (1983) Richard Bernstein explains the notion of *phronesis* in the following way:

> It is a type of reasoning in which there is a mediation between general principles and a concrete particular situation that requires choice and decision. In forming such a judgement there are no determinate technical rules by which a particular can simply be subsumed under that which is general or universal. What is required is an interpretation and specification of universals that are appropriate to this particular situation. (p. 54)

Practical wisdom does indeed have a certain proximity to the expert knowledge proper to technique, but what separates it fundamentally from technical expertise is that it continually asks the question of the Good, for example, about the good way of life or the best constitution of the state. The ethical person is concerned, not simply with managing things, but with the ordering of lives. All actions which are not strictly routine and not purely intuitive, require deliberation, both with respect to ends and to means: the desirability and possibility of ends and the suitability and availability of means. Or as Bernstein (1986) puts it, "Technical action does not require that the means that allow it to arrive at an end be weighted anew on each occasion, this is what is required in ethical know-how" (p. 92).

Phronesis is not only the rationality of means and ends but more fundamentally a mode of understanding. In his hermeneutic philosophy Hans Georg Gadamer suggests that there is an inextricable relationship between the theoretical and the practical in our understanding and that all genuine understanding shapes our lives. For Gadamer there is no understanding without being simultaneously an application (concretization of the general and application to our situation), and there is no application without an understanding and an interpretation. *Phronesis* is the form of reasoning and knowledge that involves a distinctive mediation between the past and the present, the universal and the particular. What characterizes the hermeneutic conception of application exemplified in *phronesis* is the rejection of the technological principle that first we must "know" and only afterward we "do." In his study of Gadamer's hermeneutics, Weinsheimer (1985) argues that Gadamer does not deny that the application of general experience to the current object of research is implied in all historical knowledge, but he wants to say that the understanding of history involves a form of application that is itself a way of knowing and not merely a way of subsuming a particular event under an already known general law (p. 35). Such application derives from our historical being; it cannot be postponed until after knowledge is completed but is instead coincident with it. Gadamer argues that in the human sciences theory and practice are so intertwined that neither can be accorded priority (p. 35). In other words, all historical and cultural understanding is application to the present situation and is therefore a kind of self-understanding.

For Gadamer, the hermeneutical process used in making a legal judgement is paradigmatic for practical reasoning which includes understanding, interpretation and application. A judge does not simply "apply" fixed, determinate laws to particular cases or situations. Rather, the judge must interpret and appropriate precedents and laws to each new situation. It is by virtue of such considered judgement that the meaning of the law and the meaning of particular cases are codetermined. And according to Gadamer, this process is universal and is found in any real judgement. Judgment, Gadamer maintains, cannot be replaced by, or transformed into, science. As Immanuel Kant stated this principle in his *Critique of Judgment* (1951), there are no rules governing the reasonable use of rules. Gadamer (1984) points to the same conclusion in Plato:

> In Plato this comes out in Phaedrus (268ff) in an amusing exaggeration: if anyone were to possess only all the physician's information and rules of thumb without knowing where and when to apply them, he would not be a physician. Were a tragedian or musician only to have learned the general rules and techniques of his art and yet produced no work using that knowledge, he would not be a poet or musician (280ff). (pp. 121,122)

For Gadamer, the knowledge that gives direction to action is "essentially called for by concrete situations in which we are to choose the thing to be done; and no learned and mastered technique can spare us the task of deliberation and decision" (1984 p. 92). Experience alone, however, is not itself sufficient for making right ethical decisions;

there must also be knowledge of what is right prior to experience to guide those decisions. Like the craftsman, the person faced with an ethical decision always begins with a general idea, an idea of what is generally right. Without moral prejudices, there are no ethical decisions. And yet, that prior knowledge cannot be reduced to unity or refined into a universal rule independent of experience because ethical knowledge also requires experience, knowledge of the concrete situation.

In other words, practical knowledge is a kind of knowledge that springs from experience, not from theory or purely speculative reason. What keeps practical wisdom from degenerating into mere cleverness or calculation is that practical wisdom presupposes the existence of the *traditions* and the *nomoi* (funded laws) in the *polis* or community. Truth, Gadamer says, always speaks to us through the tradition. All reason functions *within* traditions and all understanding is in this sense historical. The universal element is something that is essentially open to interpretation and that is only specified when mediated in a concrete situation that requires choice and decision. And given a community in which there is a living, shared acceptance of ethical principle and understanding of basic terms, practical wisdom, as the mediation of such universals to particular situations, should not degenerate into instrumental procedures or mere cleverness.

B. Phronesis at Work: Pedagogic Tactfulness

What do these philosophical explorations mean to concrete pedagogic situations? How does a teacher or a principal act when acting in the spirit of *phronesis*? Van Manen, a contemporary educational theorist, has proposed a pedagogic theorizing that has strong similarities to the notion of phronesis or practical wisdom. He argues that there is a dimension to pedagogic competence which transcends the "techne" of teaching, something he calls "pedagogic thoughtfulness" and "pedagogic tactfulness" (1984a, 1986). While the application of theoretic knowledge (technique) requires skills which derive from the practice of living, pedagogic thoughtfulness and pedagogic tactfulness transcends both technique and skills (1984a, p. 1).

Van Manen prefers to make his points with the help of anecdotes taken from real-life situations. In *The Tone of Teaching* (1986) the author tells a story of a five-year-old boy who has to go to the city to see a psychologist who wants to conduct a series of diagnostic tests on him. Van Manen describes how the little boy is left alone with this man in an almost empty room, except for a big box with test materials. The little boy looks very uncomfortable and soon be begins to cry. And while the big man tells Danny there is no need for crying, he begins to write with an eye on the watch in front of him, making notes about the duration and intensity of Danny's crying. Later he explains that he did not want to interfere in Danny's reaction to the situation. The scene is broken up when the mother, who had been waiting behind the looking glass, could no longer bear her son's distress, enters the room and takes him on her lap. The boy stops sobbing and calms down.

What does this story tell us about practical widsom? Van Manen points out that this professional had a good deal of "clinical knowledge" but lacked what he calls "thoughtfulness," or what he calls elsewhere (1984a) "pedagogic tact" or "tactfulness." Pedagogic tact is the sensitivity to a situation that enables a person to do pedagogically the right thing for a child (1984a, p. 2). In the situation described above, things could have been done differently. Van Manen (1986) writes:

> The psychologist could have taken the five-year-old by the hand and said, "Let's go in here and see if there are some toys for us." They might have walked into the room and explored it together. If it had been a child-friendly space, they could have looked at pictures on the wall and got to know one another. As soon as they were comfortable with one another, they could have turned their attention to the box. The psychologist could have made invitational suggestions that they find out what might be in such an intriguing big box. Some toys, surely, for both of them. Maybe they could sit on the floor together and play. (p. 8)

Basic to this view is that the tactful person shows a particular sensitivity and attunement to situations in which no theoretical knowledge, no rules or general principles of how to behave can be found. A tactful principal, van Manen (1986) says in relation to another anecdote, knows what to say and what not to say, what to mention and what to pass over or leave unsaid. The ability of a principal to enter into the world of a child is thoughtfulness (p. 10).

Does this then mean that theorizing has no place in pedagogic knowledge of the kind van Manen speaks of? Not at all. We find in his pedagogy the hermeneutical assumption that there is an inextricable connection between the theoretical and the practical in our understanding and that understanding has the potential of shaping our lives. Theory is "immanently practical" writes van Manen (1982, p. 47). While the author acknowledges that giving names to pedagogic situations may be helpful it can also stands in the way of genuine understanding. By assigning words to pedagogic existentials we inevitably convert into discrete entities what functions much more dynamically (p. 33). Elsewhere, van Manen (1986) writes:

> Once I call child "a behavior problem" or a "low achiever," or once I refer to him or her as someone who has a special learning style, a particular mode of cognitive functioning, then I am inclined immediately to reach into my portfolio of instructional tricks for a specific instructional intervention. What happens then is that I forego the possibility of truly listening to and seeing the specific child. Instead, I put the child away in categorical language, as constraining as a real prison. (p. 18)

The question has rather to do with the sense in which we speak of theorizing. Van Manen points out that instead of addressing the possibility of pedagogic wisdom (as knowledge of the whole), curriculum research and theory has been focusing on the "identification of instructional means, teaching techniques, and trainable competences which in their aggregate still lack wholeness and thus render the essence of pedagogy unintelligible. The epistemological search for method ... tends to frustrate every attempt to gain access to that which grounds the good of pedagogy" (1982, p. 47). Theory is good, he continues, to the extent that it serves or eulogizes the good (p. 48). We need to reflect on the original intention of theorizing. Van Manen (1982) writes:

> The Greek word theoria connotes "wakefulness of mind" in the "contemplation" or "pure viewing" of truth. But truth in the original Greek sense is not equivalent to our present notion of truth as a property of consensus among theorists or of the correspondence between a proposition and things described. Truth in the Greek sense refers us to the disclosure of the essential nature, the essence, or the good of things. (p. 44)

To be mindful of the original intention of theorizing, according to his view, means to turn to the world of living with children, the world prior to conceptual reconstruction of curriculum theorizing in its various forms (p. 47). We need to attend to the things of everyday life with children as they present themselves to us. But while the author acknowledges that anyone who acts tactfully in the lives of children is a pedagogue, he points out that only a person who can bring to speech (to consciousness) the logos of this pedagogic tactfulness is a theorist in a more profound sense (p. 47). Theorizing, he writes, "resembles a poetizing hermeneutic activity. Theorizing as edifying activity is the conversational transformation of flesh into word, lived experience into language" (p. 48). In other words, theoretical pedagogy is not a (dismembered) body of knowledge, rather it orients us to the body as knowledge, it orients us to the "flesh of the world" (p. 47).

Van Manen also maintains that pedagogic theorizing and pedagogic research is in a fundamental sense a *form of life*. The charge of the educational theorist is, according to van Manen (1982), to impregnate his or her pedagogic tactfulness with hermeneutic expertise by drawing inspiration from that which draws us nearer to the child (p. 48). And those who refuse to reflect on the question of how their own lives as theorists are exemplary displays of true pedagogy therefore fail to understand the essentially communal character of their calling (p. 47). Part of this conviction is that the purpose, the method, and the content of research and theorizing must always be in dialogue with each other. But hermeneutic pedagogical research must, according to van Manen, become phenomenological as well. Phenomenology, according to van Manen, is a research orientation that can give educators the style of knowing and the kind of theorizing of the unique which sponsors the pedagogic thoughtfulness required for tactful acting with children. It aims to come to a deeper understanding of the nature or meaning of our everyday experiences by asking, "What is this or that kind of experience like?" (1989, p. 10). Phenomenological research sponsors a certain attentive awareness to the details and seemingly trivial dimensions of our everyday educational lives (1984a). It makes us thoughtfully aware of the consequential in the inconsequential, the significant in the taken-for-granted (p. 12).[8]

What is edified in the phenomenological pedagogy is not the epistemological principle of impersonal, valid knowledge, but the ontological principle of personal, authentic being (1984a, p. 10). In an article on the pedagogic teaching of M. J. Langeveld (1978-79) van Manen points out, however, that a phenomenological description is not in itself a pedagogically complete piece of research (p. 50). To be educational research, it must always be structured pedagogically; that is, it should be grounded reflectively in the emancipatory norms toward which all education is oriented: mature adulthood (p. 50). The way we ask question is part of our theoretic orientation. "To truly question something," van Manen (1984c) writes, "is to interrogate something from the heart of our existence, from the centre of our being" (p. 45). Theorizing contributes to one's resourcefulness by directing the orienting questions toward the source itself; the source which gives life or spirit to (inspires) our pedagogic life (1982b, p. 298).

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[8] Elsewhere, in "Doing Phenomenological Research and Writing: An Introduction" (1984b) and "Practicing Phenomenological Writing" (1984c), van Manen describes how phenomenological research and writing are inextricably intertwined activities.

C. Toward a Pedagogy of Computers

In what way does previous discussion about technology and pedagogy foster an answer to the question about the possibility of a pedagogy of computers? How can practical wisdom (*phronesis*) be applied to the problems of computers? Or rather, what is an educational understanding of an application? For the Greeks, practical wisdom meant a distinctive mediation between ends and means, grounded in the vision of the Good. Practical wisdom therefore requires that the technological means that allow the educators to arrive at an end be weighted anew on each occasion. This is the reason why the technologizing of an educational practice can never be generalized to the technologizing of other types of practices. Means and ends have to be co-determined. The reflection required in practical reasoning is not mechanical or instrumental in any way but exemplifies instead an attempt to *know* in a hermeneutic sense of the word. From the auspices of practical reasoning an application becomes a *hermeneutic problem* mediated by pedagogic reflection. But what kind of knowledge is needed in practical wisdom?

We can perhaps come to a better understanding of the educational meaning of application by contrasting it with the technical notion of application. There is no doubt that technological applications have generally been understood in instrumental terms, as a problem of applying ready-made (scientific) knowledge or principles to a given situation or a given task, often imposing new (and sometimes irrelevant) categories or structures onto the situation for the sake of efficiency and control. Understanding exemplifying practical reasoning, however, gives the notion of application a totally different meaning. In technical application the craftsperson has a fairly explicit knowledge of the end, the thing to be produced and most often of the means to reach that end. The craftsperson thus knows what he or she has in hand. Like the craftsperson, the person faced with an ethical decision always begins with a general idea of what is generally right for without moral prejudices there are no ethical decisions. The fundamental difference is that ethical knowledge cannot be reduced to a universal rule independent of experience because ends do not exist in isolation apart from the means, or from a concrete situation. It is only through an application that the ends and means, concept and reality, are co-determined.

In the hermeneutical sense application is always reciprocal. To view a computer application as a hermeneutical problem means, on the one hand, to view the situation or task to which the computer is applied *in terms of* the instrument itself. This means, as we have seen, investigating the *world* disclosed by the computer in the form of related meanings and practices. As pointed out above, it is only in relation to concrete situations or in relation to given tasks that the technology will receive the the concrete meaning necessary to evaluate its meaning and significance. And because the meaning of a situation is always partially constituted through the actions and intentions of those who find themselves in that situation, pedagogic reflection on a computer application must similarly be grounded in the (inter-)subjective meanings associated with the computer. We need to ask questions like: *What does the computer application mean for those who will use it in their daily life or who will be affected by it? What is it like to be the user of, or to be affected by, a given technique?* More fundamentally, though, understanding a computer application means to apply our own knowledge and understanding of the meaning of education to computers, not just personal prejudices that somehow "fit" into the framwork disclosed by the computer, but the knowledge handed down to us in and through the tradition to which we belong. Prejudices, therefore, are not abandoned but put at risk. In what follows I suggest that a hermeneutically inspired pedagogy must investigate prejudices in relation to the five following themes. These themes are: (1) the aims of education, (2) computers and language, (3) the computer-as-tutor, (4) person-world relations, and (5) the impact of the medium. In the following sections I will offer my rational for selecting these themes.

The Aims of Education

An evaluation of the significance of computers in the curriculum is impossible without due attention to the aims of education. Hence, a theoretical reorientation must be aware of its fundamental presuppositions concerning these aims. What sort of intellectual and personal development are educators aiming at? A reading of *Mindstorms* reveals quite clearly that the rationality Papert is talking about is a special kind of rationality. This is a rationality which consists in finding solutions to technical problems, solutions for which a computer program is a paradigmatic form. Accordingly, the aims of education are in Papert's view in one way or another related to a skill orientation and problem solving. The problem however is that Papert does not make any attempt to define the scope, function and limitations of instrumental rationality in education. What is the significance of critical reflection in the education of children and young people according to Papert? What about the art of questioning? sensitivity? attunement to Being? understanding of others?

Perhaps the clearest opposition to the instrumental rationality proposed in Papert's *Mindstorms* is found in the notion which the Scottish philosopher John Macmurray (1935) called *emotional rationality*. It refers to the central part played by the emotional-feeling life in cognition. Douglas Sloan, the editor of *The Computers in Education: A Critical Perspective* (1984), is one of those educational theorists who sees this concept as a central concept in educational discourse. Sloan writes:

> The main cognitive activity of the emotions is twofold. The emotions guide and empower logical reason, setting its goal and providing its energy. And, more important, feelings themselves, when properly developed and educated, work as our most penetrating and indispensable organs of cognition. It is only through a deep, feeling-awareness that we can come to know the qualitative dimension of life -- in nature, in other persons, in ourselves. It is in this larger matrix of qualitative reality that all reason, including the logical and calculative, ultimately find its ground. (p. 4)

Similarly, we need to question Papert's view that, by teaching instrumental reasoning, the computer teaches what instrumental reasoning is *not* and will lead eventually to a greater intellectual sophistication. We need to question those assumptions which say that through programming children develop an understanding of the implications of non-instrumental thinking. A number of psychological and ethnographic researchers (Brod, 1984; Levy, 1984; Turkle, 1984) have shown quite convincingly, in my view, that a massive penetration of computers into the lives of people affects the cognitive outlook of the users in an almost dangerously narrowing way.

Computers and Language

The recognition of the pedagogic significance of language and writing is increasing as one can see in recent trends towards "Writing across the curriculum" in British and American schools. These projects indicate that there is a growing recognition of the fact that all learning is more or less mediated through the mother tongue, calling for a much closer look at the ways in which writing is taught and practiced in schools. Unfortunately, however, research does not reveal much understanding of this fact in writing instruction. On the contrary, recent research findings suggest that ordinary writing instruction in American schools is in a pretty bad shape. Bridge and Hiebert (1985) study of writing activities in six elementary classrooms found out that students spent an average of about 15% of their time on some type of writing activity with most of that time devoted to the mechanics of grammar and punctuation. Only the fifth-grade teachers in the study provided examples of writing instruction directed toward helping students to express their intended meanings more clearly. Petty and Finn (1981) examined the use of "language arts" instructional time apart from the teaching of reading, which remains centered on basal programs. They report that 86.6 percent of primary teachers spend "at least 30 minutes daily' on language arts, though the "practices reported as being used most frequently" centered on "having students do punctuation and capitalization exercises" and "requiring completion of grammar exercises." Seventy-five percent of grade 4 teachers reported that they "almost always" administer objective tests in writing and language study (quoted from de Castell & Luke, pp. 423, 424). Or as de Castell and Luke (1987) write:

> What occurs in many modern classrooms, then, is a mechanistic reduction of literacy into a hierarchy of constitutent skills. In order to become "skilled," students must suspend their own particular worldview, background knowledge, and existing linguistic competence. As important is the fact that teachers must undergo a parallel transformation, sacrificing technique to the directive of technology. Both teachers and students are thus "deskilled" and "reskilled" by the technology, as previously acquired knowledge and competence are replaced by externally defined, transmitted, and tested skills. (p. 425)

How does the word processor enter this picture? What sort of relationship to language does the computer encourage? According to a longstanding view, technological artifacts have been conceived as extensions of the human being: the automobile as the extension of the foot, the telescope as the extension of the eye, and now the computer as the extension of the calculating function of the brain. Perhaps the most comprehensive understanding of computers, however, is to regard them as an extension of language (Burch, 1984, p. 8). As we noticed above, the question of language is central to Papert's view of the educational significance of computers. But his views on language needs to be critically examined.

Hermeneutical philosophers have for a long time objected to the view which presents language as a tool or instrument that human beings use in their understanding of the world, arguing that this instrumental conception of language fails to see its existential significance. Heidegger called language the "House of Being" and Gadamer argues that only because we have language do we have a "world." For both philosophers, language is the field through which meaning is realized. We have therefore to consider the ways in which the world becomes meaningful to us in a technological world and the role language plays in that process. In a hermeneutic sense tools are never just tools, they are metaphors as well. They influence how we experience the world and how we interpret those experiences. Don Ihde (1983), for instance, has suggested that today people understand themselves increasingly *through* what he calls the "technological texture." Today we are surrounded by metaphors derived from computer technology and we need to investigate the significance of that phenomenon. The question is, how does the computer change our relationship to language? How does the computer affect our self-understanding?

Computers and language interact in other ways as well. It has been maintained by a number of researchers that one of the greatest instructional benefits of computers may be found in open-ended computer activities such as *word processing*. These researchers have identified a number of ways to exploit the technical possibilities of word processors to assist student writers in the writing process. One recurrent theme in this literature is that the editing capabilities of the word processor frees the writer from the burden of tedious recopying and gives the writer more time for creative writing (Clark, 1985; Daiute, 1985; Ragsdale, 1982). All this sound quite convincing, at least to begin with. But does this view of writing on the computer rest on a adequate understanding of the meaning and significance of writing? Does recopying have no value in the process of writing? In Chapter Five I shall try to explore a number of similar claims about the pedagogic good of word processing.

The Computer-as-Tutor

A recurrent notion in the discourse on computers in the curriculum is the notion of the computer-as-tutor. What makes this idea so attractive to many is the possibility of "individualizing" instruction by means of this new technology. In its tutorial function, the computer serves as a substitute teacher, guiding students through pre-programmed lessons in various subjects. Typically, the student is led through a set of instructions and then prompted to answer questions. A correct answer moves the student to the next step in the lesson; a wrong answer takes the student back over the same material. Some programs even prompt students on the basis of text written by students to pick out predefined classes of words found in the text. In this way, the computer can hold what looks like a "conversation" with the student. There are, for instance, programs to help students write their own stories or poems by prompting them to search their imaginations and resources. Many educational theorists cherish high expectations from this use of computers. One of them is Alfred Bork:

> I regard the most important advantage as interaction. The computer can provide frequent and highly relevant feedback, based on exactly what the student has been doing. Questions can be asked and response can be carefully analyzed, all within the common everyday language of the student. (1985, p. 26)

Although sometimes classified as a special category, drill and practice is another side of the tutorial function. The main difference is that in drilling and practising the emphasis is on repetition but on the acquisition of new knowledge in classical tutoring. Low level mathematical skills and grammar programs fall in this category, supposedly providing individual attention to students. An English teacher can, for example, spot a recurring error in a student's writing, and the student is referred to an appropriate program that will guide him or her through repetitive exercises in comma splicers.

A number of pedagogic issues begin to emerge here, particularly with respect to the meaning of basic concepts. What is the nature of the computer's "response" to students? How does a computer response differ from a truly human response? Is it "responsible" response? What is the difference between a "response" and "feedback?" In what sense does the computer individualize instruction? Does the computer individualize instruction in the sense that it attempts to grasp the point of the individual, the child's needs and meanings? Not everyone, however, is equally fascinated by the idea of a tutoring computer. In an article evaluating Papert's *Mindstorms*, John Davy (1984) writes:

> All this would be funny if it were not so sad. It is well known that autistic children can make close relationships with things that they cannot make with people. It could be interesting to explore whether LOGO might help some autistic children develop confidence enough to venture to play with people. But we are talking about pathologies and therapy, not education. What kind

> of a culture are we developing if people have to meet its most powerful ideas through machines rather than through people? (p. 16)

The notion of the computer-as-tutor evokes many more questions, including questions about the kind of knowledge that is promoted by the computer-as-tutor. What sort of knowledge and understanding is promoted by the computer-as-tutor? What kind of understanding is likely to come out of a learning process in which the subject matter has been broken up into self-contained blocks of information? What is a skill and what are the limitations of skill-based education? These are some of the questions and issues which needs to be dealt with in an educational discourse on computers in the curriculum.

Human-World Relations

The next issue that must be explored in relation to the use of computers in education has to do with the underlying metaphysics of technology, particularly the metaphysics of *human-world relations*. Part of the rhetoric of computers is the alleged control and efficiency they give the user of whatever the task is, sometimes giving the impression that the child's or the adult's most important relationship to the world is control. This raises a number of questions about the way computers mediate between the user and the world and about the quality of human-world relations as mediated by the computer. What sort of a world is Papert's "microworld?" What is the meaning and significance of the "RIGHT 30 world?" What kind of human-world relations does Papert's computer culture cultivate?

In "Microcumputers in Education: Why Is Earlier Better?" (1984) Harriet K. Cuffaro raises similar question: "In educational settings that have consistently stressed the importance of experience, direct participation, and sensory exploration, the presence of two-dimensional screen, abstractions, and simulations is anomalous. Phrased in early childhood terms, what kind of a 'material' is the microcomputer?" (p. 26). Or as Douglas Sloan (1984) asks: "What is the effect of the flat, two-dimensional, visual, and externally supplied image, and of the lifeless though florid colors of the viewing screen, on the development of the young child's own *inner* capacity to bring to birth living, mobile, creative images of his own?" (p. 6). One of Papert's basic claims is that the computer personalizes and concretizes knowledge, including mathematical knowledge, by giving the user a "body knowledge" of highly complex problems, knowledge firmly related to children's sense and knowledge about their own bodies. But is this so? Does the computer increase the student's physical awareness of meanings? Arthur G. Zajonc (1984) gives the following answer:

> We first execute geometry and mathematics through the coordinated activity of the body. The natural transition to the concrete or representational stage can be provided simply by pencil, paper, compass, and straight-edge. The equipment should be kept minimal, never intruding or exercising its own volition. The straight line should be drawn by the child, not the computer. Once again turtle geometry ultimately usurps important activities essential for the child's cognitive development. The turtle moves, not the child. (p. 38)

In spite of his talk about body knowledge it seems as if Papert, finally, reduces thinking and reasoning to calculation, to problem-solving and the ability to "fix" things. The same applies to most tasks performed on the screen. A number of educators believe that a first prerequisite for the nourishment and development of a rich life of the senses is an environment in sensory experience: color, sound, smell, movement, texture, a direct acquaintance with nature, and so forth. And, Sloan (1984) argues, the fine sensitivity in discrimination which is the heart of emotional rationality arises in working and playing with the materials of the senses, through storytelling, drama, movement, music, painting, handwork, encounters with responsible, involved other human beings (p. 5). Cuffaro (1984), describing one particular task performed by a child on the screen, writes:

> Control is shared by the child with the program. Yet, at the child's level of understanding, the extent of the microcomputer's contribution to the happening is not apparent. This computer activity may be contrasted with a situation in which a child is "parking a car" in block play. Here, the child's eye-hand coordination must also contend with the qualitative, with the texture of the surface on which the car is moved, and with the fit between the garage opening and car width. Such complexities do not exist on two-dimensional screens. The computer version of parking a car is action in a vacuum, motion without context, and with reality twice removed. (p. 23)

And the lack of such an education, Sloan (1984) continues, can produce only a society that, whatever its cleverness and power, becomes increasingly Philistine, insensitive to life, and uncaring, because incapable of truly knowing. To understand, according to Papert, is to know how things work, to be able to "fix" things, to get them to work. The world becomes a system of means and ends. Problems are primarily defined as technical problems and solutions are generally sought in the "debugging" of the system. To know is to have control over things, to be able to "fix" things. Could it be that through his concept of the "Will to power," Nietzsche grasped the essence of technology? Could it be, that historically nihilism must be understood as the essence of a technological worldview?

The Impact of The Medium

A pedagogic reorientation towards the question about the educational use of computers must also recognize the truth of McLuhan's dictum "the medium is the message." This means that we need to understand that the change of "medium" entails more than simply more or less effective ways of doing things. It means, more than anything else, that any change in the way things are done threatens to change the meaning of the thing done. In *Technics and Praxis* (1979) and *Existential Technics* (1983) Don Ihde has drawn attention to the ways in which tools and instruments mediate between man and world, thereby transforming the original experience of the world. In use, however, the tool itself is not the focus of attention (it "withdraws") but the world as mediated "through" the tool. To understand a tool or instrument, according to this view, is to understand the nature of the "experiential transformations" brought about by the particular tool. And according to Ihde, phenomenological study is needed to uncover the nature of such changes in the experiences of the world. Sometimes it happens, according to Ihde, that the world mediated in this way is perceived as more real than the reality of the lived world. This creates what Ihde calls "tool realism," the feeling that what is mediated through the tool is somehow more real than ordinary lived reality.

Like the introduction of "programmed learning," "instructional objectives" and other educational technologies which have been implemented into educational practice, computers will inevitably affect the social and individual life-world (*Lebenswelt*) to which it is applied.[9] Similarly, the "rationality" of the computer will likely influence the way things are experienced and done, even to the point that it transforms in significant way the original meaning of the activity computerized. All this suggests that computers needs to be studied and evaluated through particular applications for it is only through particular applications, and in relation to particular activities, that such features as data processing, speed, memory and precision, receive the concreteness needed for an understanding and an evaluation of the meaning and significance of computers. This also implies, as will further be explained in the next chapter, that there is no way, pedagogically or otherwise, that one can make general judgements about the appropriateness or inappropriateness of computers as educational means. Every application needs to be studied and evaluated in its own terms and with respect to the meaning and pedagogic significance of the activity that is being computerized.

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[9] This is not to say, however, that the curricular language of educational objectives is wrong. In its proper context this language is probably an administrative convenience. Rather the problem is, as van Manen (1989) points out, that "in an age when the administrative and technological influences have penetrated and imbued themselves into the very blood of our lifeworld, teachers and even parents seem to have forgotten a certain kind of understanding: what it means to bear children, to hope for children entrusted to their care" (pp. 110, 111).

Chapter IV

METHODOLOGICAL REFLECTIONS

A. Life-World Studies

The notion of the life-world, the taken-for-granted horizon of lived meanings, has its roots in Edmund Husserl's phenomenology, although he himself did not pay serious attention to it until after the publication of Martin Heidegger's *Being and Time*. Husserl's call "Back to the things themselves" meant that we must return to the immediate, original data of our consciousness. Husserl sought the ultimate foundation of all our rational assertions in an immediate vision, i.e. an "original intuition" of the things themselves about which we want to make an assertion. His philosophy was "phenomenological" precisely because it had its starting point a field of "primordial" phenomena. Within this field Husserl did not want any induction or deduction but only intuition on the basis of an exact analysis and description. None of the methods, therefore, used in the other sciences could be of value here because they presuppose something more than what is actually given in consciousness.

The method Husserl advanced for investigating the intentional structure of consciousness, this sphere of ideal meanings, is the "phenomenological reduction." This is the attempt to suspend all beliefs about phenomena that have been accepted on scientific or common-sense grounds in order to concentrate on and comprehend that which cannot be further suspended or reduced. Our ordinary beliefs about what exist were to be "put into brackets" and only what naively appears to consciousness under the phenomenological reduction was to be accepted as valid evidence. In the last years of his life, however, Husserl began to realize serious problems pertaining to his earlier project which finally led him to the formulate the notion of life-world (*Lebenswelt*) -- the region of our ordinary experiences out of which all meaning, scientific or other, must emerge. These were primarily problems related to *intersubjectivity*, or the existence of others, and that of the *horizonal structure* of all experience. In his earlier writings the question of *how* things are given was primarily answered by saying that the world is first and foremost given in that individual things fall into various types. When Husserl moved away from purely logical investigations and turned his attention to perceptual objects (as meant) he was compelled more and more to take notice of the totality that haunts consciousness, or the fact that consciousness always points beyond itself; every object in perception is given against the background of a world which constitutes a part of its meaning. This means that Husserl could no longer identify the "given" with the "immanent."

The discovery of the life-world, or the recognition of the fact that all our particular experiences take place within the framework of our activities, interests, and concerns, had radical consequences for phenomenology. Because phenomena are mostly not immediately given, as Heidegger points out in *Being and Time* (1962), phenomenology must become hermeneutic as well. In so doing, phenomenology acknowledges the unavoidable interpretative nature of all our understanding. Concentrating on the nonobjectifying modes of disclosure in which *Dasein*, or the human being, is directly engaged in his or her world rather than reflecting upon it, Heidegger's philosophy renders unsuspendable precisely the life-world Husserl intended to reduce. He wants to show that every interpretation, including scientific interpretation, is governed by the concrete situation of the interpreter. There is thus no presuppositionless, prejudiceless interpretation for the interpreter cannot free him or herself from the ontological conditions of always already having a finite temporal situation as the horizon within which the things he or she seeks to understand have their initial meaning.

The notion of life-world studies speaks to the interest in understanding the human being's existence in the life-world, the taken-for-granted horizon of lived meanings. It is the world as it is encountered in everyday life and given in direct and immediate experience. The life-world is the setting of our common-sense, daily activities, the world of familiar objects, routine tasks, and mundane concerns. It is a world of our concern which consist in the thought "there is something to be done." In the *natural attitude* we live in the life-world, and yet we apprehend it as objective and external to us, existing independent of our actions and interests. To uncover the meaning of beings in the life-world is hard because the world is so encompassing, and at the same time so close, that it tends to elude our notice in our everyday dealings with thing. One sees right through it, so to speak, yet one could not see anything in its own manifestness without it. Life-world studies seek to explicate the meanings as we live them in our everyday existence, often suggesting new ways of looking at a phenomenon or revealing new dimensions of meaning not hitherto considered. The notion of the lifeworld has become programmatic in such disciplines as phenomenological sociology (A. Schutz), phenomenological psycho-therapy (J. H. van den Berg), phenomenological psychology (Maurice Merleau-Ponty) and phenomenological pedagogy (M. J. Langeveld, A. J. Beekman and M. van Manen).

B. Questioning Word Processing Hermeneutic Phenomenologically

If it is possible to speak of a "hermeneutical method," it would be found in questioning. It can even be said that the structure of hermeneutic experience is found in all true questioning. Being experienced in the hermeneutical sense is the consciousness of finitude, knowing that one does not know. To question something genuinely, therefore, means to "place into open" because the answer is not yet determined for it is only this kind of question that brings something into the open and reveals it. Most analytic and methodological questioning, as Gadamer (1982) shows, tend not to call into question their own guiding presuppositions, but stay within their predefined *framework* such that the answer is always potentially present and expected within the system. Thus it is, as Gadamer puts it, not so much a form of questioning as of testing. Our approach is therefore bound to proceed more by questioning than by testing. Robert Burch (1982) writes:

> We proceed more by questioning than asserting, seeking an ever more radical and comprehensive context of understanding, rather than fixing upon something "objectively evident" in a limited field. It is the scope of the question and not the "rightness" of an answer that concerns us primarily. (p. 3)

Genuine questioning, however, is more an art and thoughtfulness than a technique for there is no method of learning to question or of seeing what is questionable. What makes questioning so difficult is that the openness of the question is never absolute. It is in the nature of questioning, the "sense" of the question as Gadamer (1982) puts it, to point to a certain direction in which alone the answer can be given if it is to be meaningful (p. 326). Questioning is never presuppositionless which means that it always presupposes some prior knowledge. Similarly, hermeneutic questioning truly begins when something claims and addresses *us*, provoking *our* response. Hermeneutic questioning then requires that the researcher is capable of what Gadamer calls *Hören*, the ability to listen and to disengage preconceptions by allowing that which is questioned to "speak into the openness of the researcher's world." To study something in a hermeneutical way means then to be truly *interested* in something in the original sense of "inter-esse," of being in the midst of things. If we are engaged in a genuine questioning, as van Manen (1984) points out, then the questions themselves arise "from the heart of our existence, from the center of our being" (p. 45). Therefore, it is not as if we simply have a "problem" and then we select a method for investigating this problem. The method and the research questions, as van Manen (1984a) shows, are always dialectically related.

To question computers (word processors) hermeneutically, then, means to establish a *dialogical relationship* to this phenomenon. This does not mean that one wants to "converse" with computers through a program written to test the "artificial intelligence" of computers. Rather, it means conversing *about* computers *with* anyone who shows an interest in the topic. It means situating word processing in a dialogue consisting of answers and questions. It also means questioning this phenomenon and being open so that questioning can still occur to answerer and questioner alike. It means examining one's own presuppositions, one's own prejudices, not abandoning them by putting them at risk as we seek a deeper and more comprehensive understanding of this phenomenon. Last but not least, it means understanding those questions to which word processing is an answer and carry on the dialogue by raising further questions. As an educational theorist the interpreter must be conclusive but still open to influences.

From what has been said it is clear that the hermeneutic phenomenological researcher, whose very *raison d'etre* is to raise radical questions, cannot be satisfied with comparing the efficiency of word processors in comparison with other means of writing. He or she must wonder why and how the word processor works. He or she must consider the *conditions* upon which a given application depends and the *presuppositions* from which a particular application derives its sense and which, in consequences, defines its limitations. To understand a cultural object in the sense spoken of here is not to describe them in terms only of their primary and secondary qualities or in terms of a narrowly defined critieria of use. The *meaning* of cultural objects transcends their objective or instrumental function. Part of the meaning of any cultural object are schemes of apperception and apprehension which belong to what Alfred Schutz calls the "stock of knowledge at hand" (Schutz and Luckmann, 1973). Such stocks of knowledge comprise, among other things, a set of more or less loosely connected rules and maxims of behavior in typical situations, recipies for handling things of certain types so as to attain typical results. Understanding word processing, accordingly, means to inquire into related meanings and practices: people's expectations of it, personal feelings associated with it, presuppositions underlying a particular use, rationale for using it, and so forth. These related meanings and practices constitute the presuppositions from which the given application receives its meaning and significance. These conditions must be addressed both hermeneutically and phenomenologically. It must both explore the context to which word processing properly belongs as well as the subjective experiences associated with it. So, to understand the role of computers in the process of writing in the manner spoken of here is not to know all the different word processing packages available today, their differences or their special characteristics. Rather, it means to understand the world to which the phenomenon speaks and the principles behind their design, the conditions for the possibility of using computers in this way.

The *Rhetorical* and *Experiential* Context of Word Processing

On the one hand I will attempt to come to an understanding of what I shall call the *rhetorical context* of word processing. To study the rhetorical ideas underlying word processing means to question the context in which word processing becomes intelligible as an educational device. I am primarily interested here in the philosophical assumptions presupposed in the educational and philosophical discourse on word processing. *What conceptions of writing are presupposed in word processing? What is presupposed about language? What conception of composing does electronic cutting and pasting of texts favor? What is the meaning of rewriting in this context? What is the value of word processing for writing and writing instruction?* In this way I hope to be able to uncover more comprehensively the assumptions behind contemporary interests in word processing, and the questions about writing that make word processing a plausible answer. I believe that only by trying to situate these assumptions in the most comprehensive context in which we understand writing will we be able to discover what these ideas truly stand for.

My sources here were primarily books and articles written about the role of computers in the teaching of language arts, including Papert's *Mindstorms: Children,* *Computers, and Powerful Ideas*(1980), *Writing and Computers* (1985) by C. Daiute, *The Computer in Composition Instruction* (1984) edited by W. Wresch, *Computers and Literacy* (1985) edited by D. Chandler and S. Marcus, *Computers and Composing* (1984) by J. W. Halpern and S. Liggett, and books written about the meaning and significance of writing by writers, philosophers and educators. Included in this list are books like *The Timeless Moment* (1980) by B. Lockerbie, *Truth and Method* (1982) by H. G. Gadamer,*Teaching the Mother Tongue in Secondary Schools* (1967) by P. Gurray, *Closely Observed Children: The Diary of a Primary Classroom* (1982) by M. Armstrong, *Electric Language: A Philosophical Study of Word Processing* (1987) by M. Heim and "practicing Phenomenological Writing" (1984c) and *Researching Lived Experience* (1989) by Max van Manen.

On the other hand, any account of the conditions for the possibility of using computers in this way would be incomplete if it ignored the subjectivity of the users and the designers of this application. In this sense the present study tends to become phenomenological. In *Phenomenology and the Theory of Science* (1974) Aron Gurwitsch writes:

> Obviously, cultural objects refer to the subjective activities in which they originate. They refer to subjects who have certain intentions, pursue certain purposes, and realize their intentions by shaping corporeal things to fit their purposes ... The reference is not only to the makers but also to the users of cultural objects, that is, to those who understand and endorse the purposes to be served and who, in using them in the appropriate manner, avail themselves of the tools, instruments, etc., produced by others. (p. 93)

Things presents themselves as suitable and serviceable for certain purposes, to be handled in certain ways, as instruments and utensils, in other words, with reference to actions to be performed or performable on them. The experience of writing is indeed an essential element of the rhetorical context for much of what is said about the good of word processing refers directly to the changes in the experience of writing word that processors are said to bring about. Thus part of my inquiry into the meaning of writing and word processing is to address the subjectivity of writers, the meaning of the lived experience of writing. *What is it like to write? What is the significance of writing instruments? What is the significance of the place for writing? What is the meaning of rewriting, not only theoretically but experientially?* And finally, *what does it mean for a writer to turn away from paper and pencil and turn to a keyboard and a screen?*

My sources in here are of different kinds. First of all, my own personal experience is an important source for gaining initial insights into the experience of word processing. From the start I have tried to be attentive to my own experience of word processing, expectations, feelings and unexpected events. The subjective experiences of others have also been an important source of my reflections. At the outset I conducted a number of interviews with people about their own experiences of writing, with and without computers. I also used published material to gain insight into the experience of writing, interviews with people whose profession is writing, case-studies of computer users and other research available on the matter.

This does not mean that a hermeneutic-phenomenological study of word processing is not at all concerned with potential effects of this application. On the contrary. It has repeatedly been pointed out that changes in the way things are performed are likely to affect the nature of things themselves. Technologizing of a given practice threatens, or promises, to bring about changes in the meaning of that practice. This means that a hermeneutic phenomenological reflection on a word processing must become attentive to transformations of meanings and practices (structures of experience) resulting from the use of the computer. All tools, as Don Ihde suggests in *Technics and Praxis* (1979) and *Existential Technics* (1983), *amplify* certain experiences while *reduce* others. We can therefore expect that the application of computers to any situation or task *favors* certain meanings and practices while suppressing others. Similarly, we can always expect that some practices and some meanings lend themselves more easily to technologizing of this sort than others.

C. Hermeneutic Phenomenological Writing

To do research in the hermeneutic phenomenological tradition is always a *bringing to speech* of something. And this thoughtfully bringing to speech is most commonly a writing activity. In writing, language gains its true spirituality, says Gadamer (1982). It remains though, as van Manen (1989) points out, that the connection between research and writing is surprisingly little understood (p. 112). Hermeneutic phenomenological research is in many ways fundamentally different from research in the positivistic social sciences. In this kind of research writing does not merely enter the research process as a final step or stage. "Creating a phenomenological text," van Manen (1989) writes, "*is* the object of the research process" (p. 100). So, in a hermeneutic phenomenological work writing is rather closely fused into the research activity and reflection itself. This means that Chapter Five on word processing in this research must not be taken simply a report of research findings. It is an attempt to engage reflectively in a dialogue about the phenomenon of word processing in order to reveal aspects of word processing often overlooked and uncover a more comprehensive context through which we understand this phenomenon.

The bringing to speech of something is a linguistic act. As van Manen (1989) writes, "Language is the only way by which we can bring pedagogic experience into a symbolic form that creates by its very discursive nature a conversational relation. Writing and reading are the ways in which we sustain a conversational relation: a discourse about our pedagogic lives with children. Much depend, therefore, on the quality of our language and writing (theorizing)" (p. 100). The method of hermeneutic phenomenology consists or the ability or the art of being sensitive to the subtle undertones of language, to the way language speaks when it allows the things themselves to speak. It involves more than merely communicating of information and requires a different language from the one needed in the description of things or objects. The language of hermeneutic and phenomenology attempts to become *poetic*.[10] This does not mean, however, that Human Science is to be confused with poetry, story, or art; or that poetry, story, or art could be seen as forms of Human Science. One difference is that hermeneutic phenomenology aims to *make explicit* and *seek* universal meaning where poetry and literature remain implicit and particular" (p. 19). Poetic in the Heideggerian sense spoken of here means rather *originative*. In other words, the relation between form and the content in hermeneutic phenomenological writing is more intimate than in most positivistic kind of research. The textual quality or form of our writing cannot quite be separated from the context of the text.

A common rhetorical device in this kind of research is the use of anecdotes or stories. Van Manen (1989) points out that anecdotes, as found for example in the writings of Sartre, Marcel and Merleau-Ponty, are not to be understood as mere illustrations to "butter up" or "make more easily digestible" a difficult or boring text. Anecdotes can be understood as a methodological device in Human Science to make comprehensible some notion that easily eludes us" (p. 105). It must be emphasized that anecdotes are not meant to serve as empirical generalizations. Rather, they are a special kind of story. Their function is to disclose, to reveal or concretize meaning. In this way anecdotes exemplify a hermeneutic application at its best, mediating between the particular and the general, concrete and the universal. Van Manen (1989) mentions five functions anecdotes may have in Human Science discourse: (1) Anecdotes form a concrete counterweight to abstract theoretical thought, (2) anecdotes express a certain disdain for the alienated and alienating discourse of scholars who have difficulty showing how life and theoretical propositions are connected, (3) anecdotes can provide an account of certain teachings or doctrines which were never written down, (4) anecdotes may be encountered as concrete demonstrations of wisdom, sensitive insight, and proverbial truth, (5) anecdotes of a certain event or incident may acquire the significance of exemplary character (pp. 107, 108).

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[10] This is why, as van Manen (1989) points out, when listening to a presentation of a phenomenological nature, the audience will listen in vain for the punchline, the latest information, or the big news. As in poetry, it is inappropriate to ask for a conclusion or a summary of hermeneutic and phenomenological understanding. "To summarize a poem in order to present the result would destroy the result because the poem itself is the result" (p. 13).

Chapter V

COMPUTERS AND THE PEDAGOGY OF WRITING

A. Introduction

With the proliferation of microcomputers in the last few years a great number of people have been given the opportunity to use "user friendly," but efficient, word processing programs for personal and professional uses. It is forecasted that in only few years high-tech computer technology has largely replaced the manual or electronic typewriter as a professional writing instrument. In recent years computers have for instance transformed office work, and today word processing is becoming a taken for granted aspect of most working places in which any substantial writing activities take place. William Zinsser, the author of *On Writing Well* (1983) and *Writing with a Word Processor* (1983), made the following observation back in 1983:

> I first realized that the act of writing was about to enter a new era five years ago when I went to see an editor at The New York Times. As I was ushered through the vast city room I felt that I had strayed into the wrong office. The place was clean and carpeted and quiet. As I passed long rows of desks I saw that almost every desk had its own computer terminal and its own solemn occupant -- a man or a woman typing on the terminal screen. I saw no typewriters, no paper, no mess. It was a cool and sterile environment; the drones at their machines could have been processing insurance claims or tracking a spacecraft in orbit. What they didn't look like were newspaper people, and what the place didn't look like was a newspaper office. (p. 1)

Concern with computer technology as a writing instrument for educational purposes has also grown over the last few years. The "history" of attempts to use computer technology in the teaching of writing, however, goes further back in time. There were a number of attempts to teach English with the help of computers in the mid-1960s, when computer time became inexpensive enough to be used for instruction. The early programs generally utilized the programmed learning model B.F.Skinner (1964) outlined in his article "Why We Need Teaching Machines." These programs taught such concepts as spelling rules, capitalization, punctuation, and grammar by taking students step by step through "frames" in which short lessons were followed by brief tests to determine if students had mastered the spelling or grammar rule taught. Drill and practice programs had many adherents who praised the immediate feedback students received from the programs and the fact that some programs were so arranged to take students logically from concept to concept and could even jump back to certain concepts if it became clear from a student's answers that he or she was confused.

The first serious attempt to design programs that would respond to student writing, though, began with Ellis Page of the University of Wisconsin in 1968. Ellis punched student essays onto computer cards so that the computers could analyze the essays for such features as sentence length, word length, subordination, coordination, essay length, and many other quantifiable features. By comparing the result of the computer analysis with the evaluation of human graders, it was hoped that a correlation could be established between the degree of presence of some features and general quality of the text (Wresch, 1984, p. 5). If there were a correlation, computers could at least sort out those essays likely to be weak. The basis for modern "prompting" programs, however, is found in the works of Ellen Nold, who was experimenting with computer uses at Stanford University in the early 1970s. Rather than use the computer to analyze what students had written, she used it to start students thinking. Advanced programming languages were by then available, allowing her to construct programs that asked students questions and partially "understood" their answers. Instead of attempting a dialogue with students, she tried to ask them sufficient questions to help them identify an essay subject, an audience, and an organization for their ideas. But as indicated above, most automatic prompting programs designed in recent years are founded on Nold's pioneering work.

In the last four or five years we have witnessed a rapid growth, not only in word processing programs, but also in the production of various sorts of special-purpose programs, such as on-line dictionaries and thesauruses, text-analyses programs, spelling checkers, and several types of "interactive" programs which offer the writer all sorts of prompts that relate to special tasks at hand. And although many of these programs are designed primarily for professional purposes, writing researchers, including William Wresch (1984), Helen Schwartz (1984), Major Hugh Burns (1984), Donald Ross (1984), Von Blum (1984), Raymond Rodrigues (1984), have both attempted to work out the significance of such programs for writing instruction and participated in the design and development of these programs. Books like *Computers and Literacy* (1985) edited by Daniel Chandler and Stephen Marcus, *The Computer in Composition Instruction* (1985) edited by William Wresch and *Writing and Computers* (1985) by Colette Daiute are examples of that work.

But why this interest in using computers to teach composition? When asked about their interest in using computers to assist in the writing process, many of the researchers respond with such answers as "to encourage students to revise and edit more fully," to study composing on computers," "hoped ... that word processors with editing software might provide help for declining writing and editing skills," "intrigued by the work of Hugh Burns," "I needed help with my freshman writing courses," and so on. (Wresch 1984, p. 2). And many writing researchers feel that such programs are the first step toward an individualization of instruction, offering students help when it is most needed. Whereas students have typically had to wait days or even weeks before getting a response to their work from a teacher, the computer can respond to some aspects of their writing in seconds, often while the student is still writing. Whether it be simple spelling checkers or an analysis of style and organization, these researchers maintain, computer programs can respond to what students have written, giving them a continuing "audience," which in some cases not only comments on text, but supplies lessons and possible corrections should a student desire them (Wresch 1984, p. 3). So, when the role of the computer in the composition process is discussed it is necessary to distinguish between the "standard" word processing features which every word processing program has, such as editing capabilities with "insert," "delete," "alter," "move" and "backspace" commands, and non-standard features such as special-purpose programs, spelling checkers, databases, or text-analyses and prompting programs. In the discussion that follows I shall attempt to include these special-purpose programs insofar as possible and insofar as they have been identified as having a special significance in writing instruction.

There are still other reasons for studying word processors. The most commonly given reason for buying or using a word processor is the alleged efficiency of it and the joy of using it. It is of course well known that the most important characteristics of computers are large memory, speed and efficiency in the processing of information. Modern word processing equipments reflect these characteristics. Large amount of written material can be stored on discs, or in the computer's memory, and the text can be processed and manipulated in numerous ways. Blocks of text can be moved from one location to another, words and sentences can be altered with little or no rewriting, and a well formatted printout can be delivered at any time. For this reason, a number of professional writers, students and others whose profession requires lots of writing, have bought themselves a word processor and claim that this instrument has changed the experience of writing. But what exactly is the writer looking for in a word processor? How do these characteristics reveal themselves in practice? And finally, how do we interpret the significance of these possibilities? And finally, how do we interpret the significance of these possibilities?

In this chapter my primary aim is to consider the various aspects of the difference between writing on computers and writing with the aid of other writing equipments such as typewriters, pens or pencils. Only by understanding the difference between various items of writing equipment are we able to understand what computers, as well as the "older" writing equipment, stand for. What is the significance of the various editing capabilities of the word processor? Are word processors merely "fancy typewriters," as sometimes is argued, or are we facing here a totally new phenomenon? If so, what is the significance of the difference? Do the technically sophisticated editing possibilities of word processors create the conditions for the possibility of better writing? For easier writing? More joyful writing? How is the transfer from the pen or the typewriter to the word processor experienced? What is the significance of writing equipments for the writer? How do writers evaluate their writing equipments? These are questions that become relevant when we hear that in the near future most writing will be accomplished on some sort of word processors. First, however, I like to begin by considering what I see to be a fundamental issue, that is, the question about the meaning and significance of language and the essential difference between written and spoken language.

B. The Experience of Language

> Before too long, young writers will have the option of speaking into a computer that will transcribe their stories to written ones.
>
> (Daiute, 1985, p. 149)

In the first chapter I argued that any account of the significance of computers in the writing process presupposes an interpretive understanding of writing, an understanding that makes sense of the computer application. I have also pointed out how much of what is written in favor of computers in the composition process aims at showing how computers make writing easier than before, a familiar theme in a culture in which easiness is an important value. Maxine Greene (1982) puts it, "as we so often do in America, we go in search of the quick fix, a sure way of instilling in students what we have agreed to call "competencies" (p. 78). But here we need to take care and ask ourselves at what cost such easiness is gained. What is the price we have to pay for making writing easy? The danger is that in our search for the easy life we throw the baby out with the bathwater. Such is the danger with the idea that the computer can "free" the writer from the burden of traditional writing by making writing more like speaking. In *Writing and Computers* (1985), Colette Daiute, discusses how the computer will "blur the distinction between thinking, talking and writing:"

> In general, writing has become more dynamic -- more like talking and thinking -- as writing tools have advanced. Writing has become more like talking as the process of translating ideas into written symbols has become faster and as the written product has become more changeable. (p. xiii)

Aside from the obvious observation that by making writing "like" speaking we simply eliminate writing as such. This view fails to come to terms with the essential difference between writing and speaking and thus any possible educational significance writing may have. It is only by grasping the special nature of writing -- that which makes writing what it is -- that we will be able to understand its pedagogic significance.

That writing *is* different from speaking is well known, both at a philosophical and experiential level. To maintain that writing can, or should become more like speaking, presupposes the view that writing and speaking are merely two different "media" through which thought and ideas are transmitted. The common view of writing as the business of "getting the ideas out," and the sooner the better, speaks to this understanding of writing. What this model overlooks is that the change of "medium" affects every aspect of the communicative and expressive function of language. It overlooks the fact that thought does not exist outside of its instruments, as if pre-established before its embodiment. As most philosophers of human communication, including Hans Georg Gadamer (1982), Harold Innis (1951), Walter Ong (1982), Paul Ricoeur (1976), Jacques Derrida (1984, 1982, 1981, 1978), have attempted to show in their writings, writing has, in the course of time, transformed the nature of human thought. Both Walter Ong and Jacques Derrida are known for their explicit rejection of the model that presents writing simply as a "medium" of thinking and which subordinates writing to speech. Both strongly oppose the idea that writing is simply "a means" for representing speech, a technical device or external accessory that represents speech as physical marks. To understand writing, they would say, means to understand the ways in which writing differs from speech.

The Wrestle with the Medium

Everyone who tries to write knows that writing is a radically different performance than speaking. Most people find that expressing themselves in writing to be much more difficult undertaking than expressing themselves orally. Even writing a letter is difficult. "Let's face it, writing is hell," novelist William Styron (1983) says, even if a moment later he says without any sense of contradiction, "I find that I'm simply the happiest, the placidest, *when* I am writing . . . it's the only time I feel completely self-possessed, even when the writing itself is not going too well" (pp. 271, 272). Sitting in front of the blank page, or the empty screen, is not easy. At times the "blank page" is even experienced as insulting. No wonder Bruce Lockerbie, in *The Timeless Moment* (1980), asks himself:

> Sitting daily at this desk and typewriter -- surrounded by scattered papers overflowing onto the floor at my feet, threatened by piles of books about to topple -- I sometimes ask myself what I am doing or trying to do. (p. 81)

The difficulty of writing is not at all confined to professional writing. Teachers of writing know perfectly well that writing is also difficult for children. A good account of the deliberate processes involved in the composition of apparently "simple" children's stories is given in Michael Armstrong's *Closely Observed Children: The Diary of a Primary Classroom* (1982). Armstrong achieves his insights into children's difficulties and their achievements in this book by, among other things, participating very closely in the children's choices and dilemmas as they write. In the beginning of his description, Armstrong makes the important point that anyone who comes into contact with young children's writing for the first time is most likely to be impressed by the apparent discrepancy between the liveliness and fluency of their conversation and the flatness and awkwardness of their writing. Armstong writes:

> Most children could only manage a few stiff sentences and several couldn't really think of anything special that had happened to them in the holidays. (Or perhaps it's that everything is special and how, after all, is one to select.) Writing is not like telling it anyway, especially not if you're only at the beginning of learning to write. (p. 10)

Armstrong explains that at the beginning of his observation he identified the problem of writing as one of helping children to reproduce in writing the vivacity of their talk, as if it were simply a matter of copying onto the page what they had said aloud. As time went on, however, and he grew more familiar with children's writing, he began to see that this was to misunderstand both their intentions and their achievements. The way in which the children with whom he worked set about writing suggested, as Armstrong puts it, that they were strongly:

> impressed by the contrast between the improvisatory quality of conversation, where meaning depends not on the words alone but on the gestures, expressions and tones of voice accompanying them, on the immediate and direct response between teller and listener, and the relative permanence and isolation of written words on the page. (p. 11)

Armstrong comments that it seemed as if the children identified their problem not as how to reproduce in writing the expressiveness of their speech but as how to distil the experiences of which they had spoken in new and different ways appropriate to the distinctive medium of writing. These things, however, had to be learned. The contrast between the liveliness of the spoken recollections and the flat, broken sentences was so striking that a frustration with writing could readily be understood. How was one to select, order and phrase the rich, complex, and many-layered experience one intended to describe?

Armstrong also noticed that often the children found it hard to order their experience with sufficient clarity to write about it, often, it seemed, because of their closeness to the experience itself. Sometimes they would begin a story or reminiscence boldly enough, recording the opening events in considerable detail and with a certain descriptive verve, only to find that by the time they had finished the introduction they had already exhausted their narrative energy and were at loss how to continue. The problem is not just one of organization, according to Armstrong, rather it is the peculiar relationship to one's own experience that writing demands which is at stake. Armstrong points out that there is a sense in which children, like adults, have to "objectify" a personal experience before they can write about it. To get exposed to a particular experience does not by itself do the trick. Armstrong writes:

> Often "stimuli for writing," such as walks through the snow, (we had tried this out a week or two before) are excellent stimuli but not for writing -- the experience is too immediate and subjective. After an exciting experience we do perhaps go through a process of sorting it out, after which we can write about it. Two days later, Chris wrote extremely well about this experience. Had the modelling made his experience in some way objective so that he could then write about it? (p. 239)

Armstrong concludes that writing gradually transforms the children's relationship to their experience. Gradually something previously only "lived through" becomes an object of inquiry, and reflection, making the writer more attentive toward his or her own lived experiences. He was also fascinated with children's concern for form, for telling a story in carefully ordered prose, with often careful choice of language. And finally Armstrong noticed with great respect the moral and metaphysical concerns that ran through the children's stories -- themes of unfairness, necessity, prohibitions, excitement transformed into tragedy, etc. -- as well as the personal style the children developed as a result of their personal experience and unique personalities.

Iconic Augmentation

The difficulty of writing should make us realize that the awareness of the technological effects (Heidegger's *Enframing*) of writing need not make us condemn it. On the contrary, as the philosophers of writing have attempted to show, writing enlarges the potentiality of language beyond measure. It restructures thought, and in the process aids consciousness to achieve its fuller potentials. As soon as we realize that writing is more than simply a "fixing" of discourse in some exterior bearer -- a simple change of medium -- and that the medium itself brings about radical changes in the message itself, we are in a position to begin to appreciate what writing can offer. Armstrong's observations discussed earlier are only the first step. What is needed is a systematic analysis of some of the basic ontological differences between writing and speech, analysis that deepens our understanding of writing and the potential pedagogic significance writing may have. And only thus are we able to come to terms with the question about the potentials of computers in the composition process.

A good point of departure for such an investigation is Armstrong's observation of the apparent discrepancy between the liveliness and fluency of the children's conversations and the flatness and awkwardness of their writing. In this respect one can understand the close association between death and writing so often found in philosophical discourse from Plato to Rousseau. In contrast to the redundancy of the spoken language, writing is highly reductive in nature. Such a reduction, however, can also be uplifting. All thought, as Ong (1982) shows, requires some sort of continuity and writing establishes in the text a "line" of continuity outside the mind, a line that can be retrieved by glancing back over the text selectively if a distraction confuses or obliterates from the mind the context out of which the writing emerges. Ong (1982b) also points out how writing, by distancing the reader strategically both from his material and from those who are speaking to him about it, reading fosters analytic management of knowledge (p. 184). We also find that the slowness of traditional handwriting (typically about one-tenth of the speed of oral speech) forces the mind into a slowed-down pattern that affords it the opportunity to interfere with and reorganize its more "normal," redundant process, making possible new and previously unknown modes of thinking -- analytically and verbally more precise than usually found in speech and oral cultures. All language and thought is to some degree analytic -- it breaks down the dense continuum of experience (William James' "big, blooming, buzzing confusion") into more or less separate parts, meaningful segments. Written language sharpens analysis to an even higher degree.

What is the significance of this reductive nature of writing? In *Interpretation Theory* (1976) Paul Ricoeur applies a theory of "iconicity" to make a plea for writing. Ricoeur's point of departure is the discussion in *Phaedrus* where writing is compared to painting -- the images of which are said to be weaker or less real than living beings. The question, for Ricoeur, is whether the theory of the *eikon*, which is generally held to be a mere shadow of reality, is not the presupposition of every critique addressed to any mediation through exterior marks. If it could be shown that painting is not this shadowy reduplication of reality, then it would be possible to return to the problem of writing as a chapter in a general theory of iconicity (p. 40). Ricoeur then argues that far from yielding less than the original, picturical activity may be characterized in terms of an "iconic augmentation," where the strategy of painting, for example, is to reconstruct reality on the basis of a limited optic alphabet. What is important to understand is that this strategy of contraction and miniaturization yields more by handling less. Ricoeur (1976) writes:

> In this way, the main effect of painting is to resist the entropic tendency of ordinary vision -- the shadow image of Plato -- and to increase the meaning of the universe by capturing it in the network of its abbreviated signs. This effect of saturation and culmination, within the tiny space of the frame and on the surface of a two-dimensional canvas, in opposition to the optical erosion of proper to ordinary vision, is what is meant by iconic augmentation. Whereas in ordinary vision qualities tend to neutralize one another, to blur their edges, and to shade off their contrasts, painting, at least since the invention of oil painting by Dutch artists, enhances the contrasts, gives colors back their resonance, and lets appear the luminosity within which things shine. (pp. 40, 41)

So, in the same way that painting is neither the reproduction nor a production of reality, but its metamorphosis, writing, by means of selection and unavoidable exaggeration, is a revelation of the real more real than ordinary reality. The scription of discourse, according to this theory of iconicity, is the transcription of the world, and transcription is not reduplication, but metamorphosis.

The Absence of a Concrete Addressee

One of the ways in which writing makes expression and communication more difficult is the absence of a concrete *addressee*; "the writer's 'audience' is always a fiction" Walter Ong (1977) remarks. We know, of course, that in the case of young children's writings the "audience" is usually the teacher, the parents, schoolmates, grandma or grandpa. But even here, the audience is less concrete than in their physical presence, forcing the writer, particularly as he or she grows more mature in his or her writing abilities, to anticipate the reader's response to the text. The significance of the absence of a concrete addressee in the writing situation lies primarily in the corresponding absence of a shared interpretive context of understanding. Whereas spoken discourse is addressed to someone who is determined in advanced by the dialogical situation -- to you, the second person -- a written text is addressed to an unknown reader and potentially to whoever knows how to read. This universalization of the audience is only potential, for reading is a social phenomenon which obeys certain patterns and suffers from specific social and cultural limitations. From this point of view we can now understand Gadamer's (1982) opinion that in writing language attains its true spirituality. For it is not the author's intention we seek to understand but the truth of what is said, the question to which the text is addressed, and the text is addressed to anyone who can read.

This lack of an extra-textual context in writing has numerous implications for our evaluation of written expression and communication. In a spoken discourse, for instance, the ultimate criterion for the referential scope of what we say is the possibility of showing the thing referred to as a part of the common situation. This situation surrounds the dialogue, and its landmarks can all be shown by a gesture or by pointing a finger (Ricoeur 1976, p. 34). Speech is constrained by the situation in which it is produced and need only to be appropriate to it, even if the degree of constraint and of dependency varies with the type of communicative context. Writing, on the other hand, by removing the word from the rich existential context of the spoken language, has to create its own referential-context, the grounds upon which the "discourse" proceeds. To make oneself clear without intonation, without a real hearer, one has to foresee circumspectly the possible meanings one's writing may have for possible readers, and one has to make one's language work so as to make sense all by itself, without the referential-context of the existential situation. "The writer himself must set up a role in which absent and often unknown readers can cast themselves" is a well-known statement from Walter Ong. In this sense writing aspires to being context-free. As Harries (1986) writes, "The 12 year old who stared at an account of a woodwork project by writing 'When I made it I used glue and an tenon saw' failed to appreciate that *it* had not been established textually" (p. 96). Most college teachers are familiar with the frustration of trying to read, and understand, students' papers where the writer simply proceeds on the ground that the reader knows what is left unsaid in the text itself.

The point I shall now try to make is that this distancing which writing brings about develops a new kind of communicative and expressive precision which, at a closer inspection, turns out to be an integral part of our understanding of the meaning of education. The significance of this development may perhaps be seen from empirical research like that of Basil Bernstein in Britain. Bernstein, working in the field of sociology of education at The University of London Institute of Education, has identified in his study of class-based educational achievement in Britain different linguistic "codes." Bernstein (1971) distinguishes the "restricted linguistic code" or "public language" of the lower-class English dialects in Britain and the "elaborated linguistic code," or "private language," of the middle and upper class dialects. According to Bernstein, the restricted linguistic code can be at least as expressive and precise as the elaborated code in contexts which are familiar and shared by speaker and hearer. For dealing with the unfamiliar expressively and precisely, however, the restricted linguistic code will not do; an elaborated code is absolutely needed.

As we shall see later, this has numerous implications for educational practice. Although Bernstein himself has not explicitly made the connection, Walter Ong (1986) has pointed out how the restricted linguistic code is evidently largely oral in origin and use and, like oral thought and expression, generally operates contextually, close to the human lifeworld. As Ong (1982) writes:

> The group whom Bernstein found using this code were messenger boys with no grammar school education. Their expression has a formula-like quality and strings thoughts together not in careful subordination but "like beads on a frame" (1974, p. 134) -- recognizably the formulaic and aggregative mode of oral culture. The elaborated code is one which is formed with the necessary aid of writing, and, for full elaboration, print . . . Bernstein's "restricted" and "elaborated" linguistic codes could be relabeled "oral-based" and "text-based" codes respectively. (p. 106)

Bernstein gives several examples of the difference between elaborated speech variants and restricted speech variants, demonstrating the "universal" nature of elaborated meaning context. The following example was constructed as a result of an analysis of the speech of middle-class and working-class five-year-old children. The children were given a series of four pictures which told a story and they were invited to tell the story. The first picture showed some boys playing football; in the second the ball goes through the window of a house; the third shows a woman looking out of the window and a man making an ominous gesture, and in the fourth the children are moving away. Here are the two stories:

> Three boys are playing football and one boy kicks the ball and it goes through the the window and the boys are looking at it and a man comes out and shouts at them because they've broken the window so they run away and then that lady looks out of her window and she tell the boys off.
>
> They're playing football and he kicks it and it goes through there it breaks the window and they're looking at it and he comes out and shouts at them because they've broken it so they run away and then she looks out and she tells them off. (p. 178)

With the first story the reader does not have to have the four pictures which were used as the basis for the story, whereas in the the case of the second story the reader would need the initial pictures in order to make sense of the story. In other words, the first story is free of the context which generated it, whereas the second story is much more closely tied dependent on its context. As a result the meanings of the second story are implicit, whereas the meanings of the first story are explicit. The first child takes very little for granted, whereas the second child takes a great deal for granted. As Bernstein (1971) explains:

> What we are dealing with here are differences between the children in the way they realize in language use apparently the same context. We could say that the speech of the first child generated universalistic meanings in the sense that the meanings are freed from the context and so understandable by all, whereas the speech of the second child generated particularistic meanings, in the sense that the meanings are closely tied to the context and would be fully understood by others only if they had access to the context which originally generated the speech. (p. 179)

Now, what is the relationship between communication and expression? How can a speech be rich expressively but restricted in its communicative function? To answer these questions it is necessary to consider more closely the meaning and significance of these two phenomena: communication and expression.

The Dialectic of Communication and Expression

To understand the significance of the difference between "restricted" and "elaborated" speech codes we only need to look at this difference in terms of the two main functions language is said to serve, that is, expression and communication. It is now possible to rephrase what was said earlier about this difference and maintain that the restricted linguistic code can be at least as expressive as the elaborated code, in contexts which are familiar and shared by the speaker and hearer, but in terms of its communicative function, the oral code is much more restrictive than the other. But what is meant by "expression" and "communication?" What is the relationship between the two?

In *Speaking (La Parole)* (1979) Georges Gusdorf points out how man expresses himself in various ways: linguistically and non-linguistically. Even the infant's cry or smile is an expression. And at all ages, our body is an expressive whole that is "read" by others as a sign of some internal states of feelings or consciousness. A face devoid of all expression would no longer be a human face. It has often been noticed how young children seem to have a natural inclination for expression, which suggests that in expressing him or herself, the person establishes a relationship to the world. "Nothing is completely true for us," Gusdorf writes, "as long as we cannot announce it to the world" (p. 72). Advertising is part of our joy and our suffering. With language, however, elements of sociality and self-consciousness are introduced which transform earlier relations between the individual and the world. Gusdorf writes:

> Before speech, the world is merely the present and continually disappearing context of human activities, a context in which even the limits between personality and environment are not clearly defined. Language supplies denomination, precision, decision; both awareness and knowledge. The name creates the object; it alone reaches it beyond the inconstancy of appearances. But as well it creates personal existence. (p. 37)

To name is to call into existence, to draw out from nothingness. That which cannot be named does not exist in any real sense. Language puts things into perspective according to their meaning. As Gusdorf points out to say to oneself: "I am sick," or "I am in love," or "I am shy," is not just to describe something we already know -- it is to find the solution of the riddle, to give a solution to the riddle of personal uncertainties, and thereby go beyond uncertainty (p. 37). Hence, each new word mastered by the young child increases his universe. This intimate relationship between language and world is what Gadamer (1982) has in mind when he writes that: "Whoever has language 'has' world" (p. 411). Language is therefore not simply a "presentation" of the world but is constitutive part of the human world. Gadamer (1982) writes:

> The experience is not wordless to begin with and then an object of reflection by being named, by being subsumed under the universality of the word. Rather, it is part of experience itself that it seeks and finds words that express it. We seek for the right word, i.e. the word that really belongs to the object, so that in it the object comes into language. Even if we hold to the view that this does not imply any simple copying, the word is still part of the object in that it is not simply allotted to the object as a sign. (p. 377)

It can therefore be said with confidence that language is the most powerful, though by no means the only, medium for self-expression and the realization of meaning. Language, as Gadamer points out, is not merely one symbolic system among others, as Cassirer claims, but it is a universal medium in which understanding itself is realized (1982, p. 350). Hence, by learning to speak the individual's relationship with others is taken to a new and higher level. The child discovers the world through the established language, which those around prescribe for him. To learn language, as Wittgenstein says, means to participate in a "language game," to enter a world of pre-established meanings and conventions. And as the individual's linguistic capacities develop, childish, self-centered speech gradually gives to more direct communication: a search for the other. Maxine Greene (1982) draws some implication of this for the teaching of literacy:

> Our task is to move young people to be able to educate themselves and to create the kind of classroom situations that stimulate them to do just that. Doing so, they may find themselves in a position to discover and use certain of the concepts that enable literate human beings to impose order and meaning on inchoate experience. Concepts are perspective of a sort; they are clusters of meaning. They empower persons to organize experience in order to interpret it, to have some power over it, to see and, yes, to say. To achieve literacy is, in part, to learn how to think conceptually, to structure experience, to look through wider and more diverse perspective at the lived world. (p. 85)

Greene points out how the social and personal importance of communicative competence has been emphasized by an number of prominent philosophers and pedagogues. Half a century ago John Dewey expressed the need for an articulate public and linked its emergence to a "subtle, delicate, vivid, and responsive art of communication." Only when we have achieved such communication, he said, will democracy come into its own, for democracy is a name for a life of free and enriching communion. And thirty years later Hannah Arendt spoke of humans as acting and speaking beings, disclosing themselves as subject through their acts and words. When they speak directly *to* each other, she said, they create an "in-between" or a web of relationships. Only when such a web is formed is there likely to be what she called a "public space," a space where freedom might finally appear. Both these thinkers have linked communication to the existence of a free society and both have recognized the importance of authentic speaking and writing, the kind of speaking and writing that allows people to reveal themselves to others as they try to make sense of their world (pp. 78, 79).

It is not a question, though, of an inverse relation between expression and communication. The two modes of human speech are generally complementary. As Gusdorf (1965) writes: "pure" expression, detached from all communication, remains a fiction, because all speech implies aiming toward others. Even a cry of anguish is still to address someone, to call to witness, to call for help" (p. 56). Thus, one must admit the existence of an intimate union between communication and expression: the more I communicate the less I express myself; the more I express myself, the less I communicate. As Gusdorf points out, it is necessary to choose between incomprehensibility and inauthenticity, between ex-communication and self-denial.

A long history of writing demonstrates that the struggle for domination between a *common* meaning and *personal* initiative will never cease. It defines the limits of human language. There is nothing "easy" about writing, which T. S. Eliot describes as "the intolerable wrestle/with words and meanings" and there seems to be no getting around the fact that any writer who takes writing seriously must be prepared to "wrestle" with the medium he hopes to fashion into a true work. To pay attention to each word, each sentence, and each paragraph, individually and as a whole, is a necessary condition for effective expression and communication. In this way, writing is an excellent practice for making students *language- and meaning-conscious*. Today we are reminded of P. Gurrey (1967) word about the significance of teaching the mother tongue in schools:

> These three reasons are (i) the mother tongue is the medium of instruction for most of the school subjects, so that competence in the use of the mother tongue is very often necessary for the acquisition of exact knowledge; (ii) it is the medium in which much of our thinking is carried on, so that improvement in using and responding to the mother tongue ensures improvement in thinking; (iii) it plays such an important part in almost every experience of every child and in the communication of those experiences to those around them -- the mother tongue being the child's most valuable instrument -- so that improved skill in expression and in communication of his experiences enables the child to attain to greater mastery of his experience, both inner and social, and to grow in self-control and confidence. (p. 6)

Educators are increasingly beginning to recognize that all school learning is more or less mediated through the mother tongue, calling for much closer look at the ways writing is used in schools. The realization of the educational significance of this fact is well documented in "Writing Across the Curriculum" programs schools are increasingly implementing (Freisinger, 1982; Fulwiler, 1982; Emig, 1977). The underlying philosophy derives from the growing awareness of the intimate connection between thought and language and the fact that *all* learning in schools is more or less mediated through language.

Literacy and the Text

We have already seen how the absence of a concrete addressee in writing, known in the hermeneutic literature as the "semantic autonomy" of the text, transforms the communicative function of the written language. The relationship between message and speaker at the one end of the communication chain and the relationship between the message and hearer at the other are together deeply transformed when the face-to-face relation is replaced by a more complex relation between reading to writing. Whereas spoken discourse is addressed to someone who is determined in advance by the dialogical situation -- to you, the second person -- a written text is addressed to a fictional or unknown reader and potentially to whoever knows how to read. This universalization of the audience, and the absence of a common situation generated by the spatial and temporal distance between writer and reader, is one of the more striking effects of writing. On the writer's side this means, among other things, that the writer has to anticipate the reader's response to the text, particularly situation. And to do this well the writer needs to be able to do what G. H. Mead called "to take the role of the other," which, at a certain stage in the individual's cognitive development, means to be able to take the role of *The Generalized Other*. And to "take the role of the Generalized Other" in writing is nothing but another expression for the universalization of the audience.

Coming back to Bernstein's study it is now possible to interpret his findings in the light of the previous discussion. The "restricted" code is, as was pointed out, basically oral in nature, functioning closely to the lifeworld and largely untouched by the standards set by writing. Bernstein's explanations may be of some significance here. Bernstein maintains that the kind of social relations which are embedded in open role systems call for linguistic elaboration. The role flexibility and the emphasis on person-oriented interaction imply modes of communication through which individual's unique experiences and judgements are reciprocally addressed by means of an elaborated linguistic code. The rigidity and the relatively clear-cut nature of the closed role system emphasizing position-oriented interaction is more congruent with low linguistic elaboration. Thus, family interaction becomes an intervening variable between social class and linguistic elaboration (Thorlindsson, 1987, p. 699).

In other words, middle-class pedagogy in Britain, according to this view, is largely text-oriented in nature whereas lower-class pedagogy is basically oral in nature. And this, according to Bernstein, explains to some degree differences in educational achievements between middle and lower-class children. In schools, where universal linguistic code is taken for granted, lower-class students are more likely to encounter difficulties in expressing themselves, understanding texts and teachers, in a language code they are not familiar with. Though Bernstein himself has repeatedly refused to acknowledge that he holds a normative conception of linguistic codes, it is certainly a bad pedagogy to insist that because there is nothing intrinsically "wrong" with other dialects, it makes no difference whether schools promote writing-oriented or speech-oriented language use. On the contrary, it must be the duty of the educator to explore the nature of such differences and decide on the pedagogic value of each, even if the implications for action that are to follow cannot be easily decided.

Conclusion

What the previous discussion suggests, it seems, is that any evaluation of the pedagogic good of computers in writing instruction presupposes a pedagogy of writing, an educational philosophy concerning the pedagogic significance of the difference between spoken and written language. And it goes without saying that if this difference is appreciated as having some educational significance it follows that anything, or any tool, that makes writing more like speaking does not serve those educational objectives that attempt to exploit the significance of this difference. Much of what has been put forward about computers in the writing process fails to come to terms with the essential difference between writing and speaking, hence the possible educational value that can be assigned to writing and word processors.

C. Writing is Physical

> Writing by hand, mouthing by mouth: in each case you get a very strong physical sense of the emergence of language -- squeezed out like a well-formed stool -- what satisfaction! what bliss!.
>
> (William Gass, 1981, p. 259)

One of the recurrent themes in the literature on computers in the writing process is how the computer will eventually be able to "free" the writer from the "burden" of handwriting (Daiute, 1985; Wresch, 1984; Papert, 1980; Turkle, 1984). Handwriting, as most people know, can be both slow and laborious, especially for those who have not mastered the art of writing out longhand. Word processing promises the removal of the drudgery usually associated with menial tasks connected with physical procedures. One idea is that by "simplifying" the physical involvement in writing a text, reducing the amount of rewriting or recopying needed in the writing process for instance, the computer allows the writer to "get ideas out" more quickly, thereby bringing writing "more in line" with thinking. In *Writing and Computers* (1985) Collette Daiute makes the following observation:

> The physical act of writing isn't very popular. Although a goal in early writing is to form letters correctly and neatly, writers soon want to be able to work quickly as well. They want their hands to move as quickly as their *thoughts*. (p. 31)

As natural as these claims may appear at first, a critical reading of such ideas will reveal that underlying the claims is a definite ontology of human being, understanding of thinking, body, and so forth, a dualistic philosophy that separates "mind" and "body" and gives absolute priority to mind and to everything that we call "thinking." Rather than simply accepting this view as presented here we need to ask ourselves about the truth of its fundamental assumptions. What is the relationship between the mind and the body? What is the relationship between thinking and writing? What is the relationship between the body and writing? Various authors have given their testimony about the puzzling nature of these relations. For example, how are we to understand Hemingway feeling that his fingers did much of the writing for him. Malcolm Cowley (1983), an experienced editor and personal friend to many well known writers, writes:

> Hemingway used to have the feeling that his fingers did much of the writing for him. After an automobile accident in Montana, when the doctors said he might lose the use of his right arm, he was afraid he would have to stop writing. (p. 16)

Similarly, Jean-Paul Sarte declared shortly after he turned blind that this was the end of his writing, that for him dictating didn't really count as writing, that he needed to sit down at his desk and write in the "old" way. How are we to understand those writers who say that they have to write in order to think? Finally, how are we to understand writers' great concern with their writing instruments, the type of pens or paper they use, or with the spatial arrangement of things on their desk or of the room in which they write?

The *Body* of Thinking and Understanding

A hermeneutic study of the above theme reveals that what we are dealing with here is an old philosophical dream of a purely transparent thought -- thought unmediated by anything but what it represents -- a dream Jacques Derrida describes as the dream of "overcoming the book." While the philosophical dream is, on the one hand, associated with the problem of the non-transparency of language, we are here facing another version of this dream, i.e. the dream of the transparency of the body. This dream, deeply imbedded in Western metaphysics, is based on Cartesian philosophy that draws a strict line between the being of our "body" and the being of our "mind." According to this tradition of metaphysics, the human body is not involved in thinking. Thinking takes place in the "mind" and this mind is contingently located in the region of the head we call brain. So, according to this tradition, writing would be seen as "essentially" a mental phenomenon and any instrument that reduces the "bodily" involvement in writing has clear pedagogic significance. To "free" the writer from handwriting or rewriting, as shown above, is to free the writer from the "burden" of his or her body.

It is only with Nietzsche and the phenomenological movement that something like a "retrieval" of the body begins to take place, especially in the writings of Martin Heidegger and later more explicitly in Merleau-Ponty's "phenomenology of perception." According to the phenomenological-existential point of view, the mind and the body may not be as separate as the Cartesian tradition has taught. The phenomenological-existential account of man's being-in-the-world reveals that consciousness is always *embodied* consciousness. However, the individual is not thought of as a body-machine, for the body the phenomenologist is talking about is the *lived-body* -- the body experience of seeing and feeling. In *Bodily Reflective Modes, A Phenomenological Method for Psychology* (1985) Kenneth Shapiro describes the notion of the lived body in the following way:

> Of course, by the body I do not refer to that object of study of the anatomist or physiologist. Rather, I intend that body which is the embodiment of our consciousness. It is that body through which we live in the world, through which we know and affect the world, and, in turn, appreciate its effects on us. It is my connection to the world and how I am in the world. (p. xvii)

In Heidegger's magnum opus *Being and Time* (1962) we find lengthy discussions of bodily activities such as hammering in relation to *Vorhandensein* and *Zuhandensein*, the experience of hardness and resistance, and the ontological possibility of being "touched" by something. And in Merleau-Ponty's *Phenomenology of Perception* (1981) we find the notion of "corporeal intentionality" upon which all higher levels of thought are built. It seems, then, as if we need to become more attentive to the "truth" of the body, the importance of gesturing, and what the "cultivation" of the senses would entail.

So, part of our inability to come to terms with the role of the body in writing is probably due to the fact that our concern with the body, just as Heidegger's concern with Being, has fallen into oblivion in the Western world. For even if the body has served, from time immemorial, as the carrier, and the metaphor, of our tradition, this same tradition has systematically distorted, suppressed, and concealed the body's essential being. The human body, David Levin (1985) writes, the body of deep "wisdom," has suffered centuries of systematic misrepresentation -- both in our metaphysical tradition and in the actual practice of life. In his early philosophical writings Karl Marx spoke about the "liberation" and "cultivation" of the five sense of the socialized man, and later, about the intellectual alienation that resulted from the separation of man's body and mental activities. But the "liberation" and "cultivation" of our five senses is not only a question of great social reform, it is also a question of becoming attentive to the nature of our lived body. Only by understanding the "pre-ontological wisdom" of the body, the sensuous body, will we be able to understand the meaning and the significance of what we call "sensory education," and the possible role handwriting may have in such a program.[11]

Now, what is the relationship between our body and thinking other than the Cartesian model suggests? In *What is Called Thinking* (1968), Heidegger suggests that thinking is more than the production of "mere" thoughts in one's head. To say that it takes place in the head is to perpetuate the old metaphysical split between human beings and the world, and between mind and the body. Thinking, in Heidegger's sense, can no longer be considered as a purely theoretical activity carried out by a transcendental ego; it manifests, rather, a possibility of our being-in-the-world. Thinking needs an appropriate vessel: a body of perception whose *Befindlichkeit*, a primordial, bodily felt sense of our being-in-the-world, grants us the potential in an implicit preunderstanding of Being (Levin, 1985, p.35). A primordial awareness of the world, then, is essentially an experience that transcends the mind/body distinction. To separate the mind and the body is both to rob the mind its bodily substratum and to transform the body into "mere" organism. Heidegger (1968) writes:

> "Craft" literally mans the strength and skill in our hands. The hand is a peculiar thing. In the common view, the hand is (merely) part of our bodily organism. But the hand's *essence* can never be determined, or explained, by its being (just) an organ which can grasp. Apes, too, have organs that can grasp, but they do not have hands. The hand is infinitely different from all grasping organs -- paws, claws, or fangs -- different by an abyss of essence. Only a being who can speak, that is, *think*, can be handy in achieving works of handicraft. But the craft of the hand is richer than we commonly imagine. The hand does not only grasp and catch, or push and pull. The hand reaches and extends, receives and welcomes -- and not just things: the hand extends itself, and receives its own welcome in the hands of others. The hand holds.

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[11] Discourse on literature and understanding, however, speaks metaphorically in several ways to this bodily substratum of thinking and writing. We speak of a "body" of literature, a "body" of understanding, of giving a "body" to something, of being "moved" by something we read or write, of being "in touch" with something, of knowing in our "hearts," "deep down," of taking a "position," of "seeing" and "grasping" instead of understanding, and so forth. And we also identify texts with the human body. They introduce a feeling for "headings" in accumulation of knowledge, and "chapters" (derives from the Latin "*caput*," meaning head). Pages have not only "heads" but also "feet" as "footnotes."

> The hand carries. The hand designs and signs ... Two hands fold into one, a gesture meant to carry man into the great oneness. The hand is all this, and this is the true handicraft. (p. 16)

Heidegger wants to draw our attention to the *thoughtful* character of our gesture and the *bodily* character of our thinking. Etymologically, "to gesture" means "to bear," "to bring forth," "to give birth to," and "to make appear." Hence, the body is the "bearer" of our thinking, the field of "bringing forth," of "showing. But gesturing is also a *techne*, a skill or a capacity, something that we can measure by considering both the character of our effort and the nature of that which this effort makes appear. According to Heidegger, this is not a question of mere making or producing, but of truth.

But what does our gestures typically bring forth? How do our gestures contribute to the appearing of beings in the truth of their Being? Heidegger wants to show us that there is a tactful way of handling things, a way of manipulating, which is mindful of their dimensionality, the span of their presence (p. 14). He gives an example of the true cabinetmaker:

> His learning to build cabinets and the like, to gain facility in the use of tools. Nor does he merely gather knowledge about the customary forms of the things he is to build. If he is to become a true cabinetmaker, he makes himself answer and respond above all to the different kinds of wood and to the shapes slumbering within wood -- to wood as it enters into man's dwelling with all the riches of its nature. In fact, this relatedness to wood is what maintains craft. Without that relatedness, the craft will never be anything but empty busywork, any occupation with it will be determined exclusively by business concerns. (pp. 14, 15)

So, every motion of the hand in every one of its work carries itself through the element of thinking, every bearing of the hand bears itself in that lement. All the works of the hand, according to Heidegger, is rooted in thinking. By virtue of patience, delicacy of touch, and gentle careful motions, the cabinetmaker's craft becomes an event of disclosing, a moment where the gesture's encounter gives birth to, or makes appear, a "new thing." Our capacity to touch presupposes our capacity to be touched. The thoughtful cabinetmaker touches the wood he is using with fingers sensitive to the precise needs of the wood. He lets his fingers, and the work of his hands be *attuned* by the wood. The wood *speaks* through its grain, and the hand is *moved* in response. As Levin (1985) writes:

> He takes pride in his tools, and handles them with a timeless care. As he planes the wood, he caresses the grain. In the flow of his movements we will observe poise and grace; and in his gentle touching and holding we may sense a visible tact. Even the gesture by which he returns the plane to its hook takes place with the slowness and the intensity of a deeply felt meditation. For a moment the sensory-motor field is opened up, and there is (*es gibt*) a space of enchantment. (p. 129)

In *The Changing Nature of Man* (1975) van den Berg tells about the "bodily experience" of memory, based on Jean Cocteau's diary. Cocteau writes at the time when he returned to the village where he spent his childhood. Van den Berg describes how Cocteau, who didn't want to lose the charm of his past too soon, recalled the way he used to walk through the streets and on the pavement. He remembered that he used to walk to the houses, trailing his finger along the walls:

> Thinking of the past, he trailed his hand along the wall. But he was not satisfied with the result; he felt something was missing. Suddenly it became clear to him what was missing: he had been smaller as a child, his hand had touched surfaces which he missed as an adult simply because he was drawing a different line. He decided to repeat the experiment, but this time he bent down. (In Paris one can do such a thing). He bent down, closed his eyes, and let his hand trace the wall at a height which had been natural in the days he went to school. And immediately appeared what he had vaguely been expecting. "Just as the needle picks up the melody from the record, I obtained the melody of the past with my hand. I found everything: my cape, the leather of my satchel, the names of my friends and of my teachers, certain expression I had used, the sound of my grandfather's voice, the smell of his beard, the smell of my sister's dresses and of my mother's gown." (p. 21)

In this example, it is the poet's finger, and not the brain, which retrieves the memory. The finger retrieves the trace of his memory by retracing its original gesture in a touching of the wall. Cocteau manages to "gather" an entire childhood past through a "care"-ful gesture of the hand. He learned to become attentive to the deeply felt pre-ontological understanding of his body. One can ask if this close relationship between mind and body isn't visible almost everywhere in everyday lived experience? Doesn't everyone, for example, recognize the experience of trying to recall something read by recalling the gesture of reading the book. And can't we think of numerous cases in which something is remembered by means of recalling our bodily gesture, such as walking around a house or a meeting with a person. Do we not recall the architecture of our youth home by recalling how we walked or played around the house? And do we not continue to take a right turn into our office even after it has been moved to the left side? The question is, what is the significance of the body in the experience of writing?

The *Body* of Writing

What does the above discussion mean for our understanding of writing and word processing? With the proliferation of word processors in the last few years the question about adaptation of the user to the machine has become a real question for many people. The point is that the use of a particular tool or instrument is not an isolated thing that can be evaluated simply by measuring well defined outcomes. In *Being and Time* (1962) Heidegger shows how the meaning of any particular entity in the world is grasped as an entity in terms of a world, which is always already there. In other words, every tool or instrument must be understood in terms of the world that makes that particular tool possible. The world, however, is so encompassing, and at the same time so close, that it eludes notice which means that people do not ordinarily notice the context from which a given entity receives its meaning. Only when some breakdown occurs is it noticed as such. At the point of breakdown the user may observe a peculiar fact: the meaning of these objects lies in their relation to a structural whole of interrelated meanings and intentions. In *Essaying Montaigne* (1982), John O'Neill writes:

> I reach out to my pen when I am ready to write without consciously thematizing either the pen as something to write with or the distance between myself and where the pen lies. My hand is already looking for something to write with and, as it were, scans the desk for a pen or pencil which is there "somewhere," where it usually is or where I just put it down, so that it too seems to guide my hand it is search. But I can only look for the pen because in some sense I have my hand on it. If writing were painful to me or if I were sensible of having to write to someone I did not care for, or for whom I had only bad news, I might "put off" writing because I do not "feel" like

> writing. In this case, my pen there on the desk does not invite me to pick it up except with a painful reminder of my relation with someone else. Thus the structure of the experience of writing is there in my fingers, in the pen and my relations to the person to whom I am writing. It is neither a structure which I "represent" to myself, which would neglect the knowledge in my fingers, nor is it a simple "reflex" stimulated by my pen, which would overlook my relations to the person I am writing. The structure of writing is an "ensemble" in which the elements function only together and whose expressive value for me plays upon my relation to myself and other. (p. 92)

Writing, according to O'Neill, needs to be looked at as a whole, a dialogue between the mind, body, and environment. The writer's eyes, hand, and ears are an expressive whole, and together they are instruments of expression. The art of writing, O'Neill writes, does not raise the writer "above" his spiritual realm half traced upon the page. The writer's fingers and the page are a working ensemble, an alternation of intelligible space and spatialized intelligence that permit the writer to speak of the consubstantiality between himself and his text (p. 84).

It was pointed out earlier that many writing researchers hold the view that one of the great things about word processors is that they simplify the physical involvement in the writing process and allow us to go as fast as our "mind" goes, with the result that writing on a word processor is somehow more "appropriate" to writing than using pen and paper. Many word processing programs even have programming language that allows the user to construct his or her own macros that further minimize the physical involvement. Simply by pressing the Return or Escape key the writer is now able to manipulate the text in various ways in no time. Sawada (1982) summarizes quite explicitly much of current opinion of the significance of the computer in the composition process:

> Writing a "paper" on paper is altogether a different task from composing a "paper" on the micro. I did not have mounds of paper scattered about with bits and pieces pasted together with an arrow here and arrow there indicating this should come after this and lines drawn through this sentence, large omit signs surrounding this paragraph, and so on. All these messy procedures are unfortunate hangovers from an old technology which really isn't very appropriate to composing. The micro, as a word processor, eliminates all these inappropriate and troublesome as well as time-consuming procedures and replaces them with other procedures which, by enabling the author to

> deal much more directly and intrinsically with the composing of ideas, and by nature appropriate to "writing." (p. 3)

Writers have on various occasions confirmed this view. Robert del Tredici (1986), a photo-journalist and a writer, turned his back to the pencil and the paper and bought himself a word processor, even if he felt beforehand that the "old" way of writing was the only true one:

> I favored metal quill and India -- quite seriously. I would write with that in journals, and also liked to write letters with India ink and a metal quill. And I'm one of those people who think that the hands-on quality of applying with a certain amount of force a writing implement to a piece of paper is very important to the process of writing. (p. 20)

However, after having seen, and tested, a word processor del Tredici made up his mind:

> And that evening, I made up my mind that I would get one. And it's a surprise, because I really thought that I was more like a medieval monk with my quill and my parchment. But what I discovered was that what happens between your mind and the computer screen isn't at all the way it happens when you write it out by hand or when you pound it out on the typewriter keys. And I find that it matches more closely the way you mind itself works. So that in fact you're kind of making a lot of shortcuts over those paths that the old technology has gotten us to. Like if you make a mistake on a typewriter, well, you used to x it out and type it in again, and we just take that for granted. That's what you do when you're writing and you want a new paragraph and you don't like the old one. Well, all that is short circuited by the computer. It's just a new way of doing it, but the punch line in it is that this new way is a lot closer to how your mind actually functions. And I find that I end up being able to express myself more easily and totally genuinely with my fingertips and the screen. (p. 20)

This idea of some sort of *correspondence* between mind and the structure of the program is found in various forms in people's accounts of their experience of writing on a word processor. Some people say it is the speed in which one can express oneself on the word processor, the fact that one is able to write as fast as one can think, that makes all the difference: while others say it is absence of risk involved. A teacher has this to say about the experience of word processing:

> I think that computers are the best device I have ever come across. It enables me to think at the terminal. To put down all of my crazy ideas, not just one. And to change my mind. And even to write concurrent ideas, that is to follow three or four strings of thought at the same time by adding to each of those things as I keep on writing in three different files. Or five different files. And when I decide that one is leading to a dead end I can drop the whole file. Or if two of them show merit I just keep going until they are

> done and I have got two separate, concurrent articles, or themes, and I can decide. (Interview, February 1985)

These examples should convince us that no study of the role of the computer in writing instruction can ignore the conception of writing that research in computer application presupposes, including the perception of the role of the body in writing. But how do we go about evaluating such claims? What is "intrinsic" to writing? It is evident that behind any such claim there is a particular conception of writing, a conception that creates the condition for the possibility of the claim itself. Given the phenomenological view of the relationship between thinking and the body discussed previously there are *a priori* reasons to be suspicious of any account of computers as somehow more appropriate to writing than, say, pencils. We need to become attentive to the bodily experience of writing, its nature and significance, in order to be understand the significance of the body in the writing process. We need, for instance, to ask ourselves if it matters whether young children learn letters by "drawing" them with a pencil or simply by "printing" them? Every tool or instrument mediates between the user and the world. In use, however, it is not the tool as such that is the focus of attention but that which is accomplised by means of the tool. Hence, in use the tool "withdraws" (Ihde, 1979). But since no tool becomes fully transparent in use, it *transforms* the user's experience of the world. It is possible, therefore, to ask about the difference in which different tools or instruments "withdraw" in use. What does it mean to write on the screen instead of writing on a sheet of paper? What is the significance of being able to write much faster than before? What is the significance of not being able to take the word processor along anywhere one goes?

In the next section I intend to explore such questions by looking at a few ways in which writing with word processors differs from other ways of writing, including writing out longhand. One would, for instance, expect that the difference between handwriting and computer writing goes far beyond the difference between writing out longhand and typing. Even if the electronic typewriter is an important step towards modern word processing equipment, computers introduce several new elements into the technology of writing. Without some understanding of the differences between "pen writing" and "computer writing" we can not understand what computers or pens truly stand for. Choosing between writing equipment entails more than a consideration of efficiency. It includes, for instance, preferences about a place for writing, time, material, and even new way of thinking, none of which can be excluded from an evaluation of writing instruments. In other words, going from one writing equipment to another means often a whole new ways of writing and thinking.

The Rhythm of Writing

It has become commonplace to speak of word processors as "pens of the future," "electronic pencils," or something of that sort. Although most people will immediately recognize the metaphorical nature of these expressions, not everyone will stop to reflect on the meaning and significance of such a usage. While metaphors demonstrate the power of language to express new meanings out of previous strands of meanings they also reflect the dual concealing-revealing power at the heart of the primordial articulation of the world. So, far from being mere literary devices or instances of imprecise language, metaphors represent a fundamental way that human beings have evolved to express and organize their world. To speak of word processors as pens or pencils does create certain connotations or connections that needs to be explicated. We may even ask ourselves if these expressions do not conceal more than they reveal? I believe that this usage blocks our attention to certain fundamental differences between word processors and ordinary pens and pencils.

A natural point of departure for reflecting on the difference between tools and machines seems to be the apparently endless discussion of whether human beings should be "adjusted" to the machines or whether the machines should be adjusted to man, a concern that among other things grew out of the experience of the automation of the workplace. It is noteworthy, however, that this question was never raised in relation to the use of tools. In *The Human Condition* (1958) Hannah Arendt writes:

> There never was any doubt about man's being adjusted or needing special adjustment to the tools he used; one might as well have adjusted him to his hands. The case of the machines is entirely different. Unlike the tools of workmanship, which at every given moment in the work process remains in the servants of the hand, the machines demand that the laborer serve them, that he adjust the natural rhythm of his body to their mechanical movement. (p. 147)

It was only with the invention of quasy-automatic machines that this question was raised. But why? In her book Arendt tries to illustrate some of the differences between tools and machines. She shows that even the most refined tool remains a servant, unable to guide or to replace the hand. Even the most primitive machine guides the body's labor and eventually replaces it altogether. What dominates what Arendt calls the "labor process," and all work processes which are performed in the mode of laboring, is neither man's purposeful effort nor the product he may desire, but the motion of the process itself and the "rhythm" it imposes upon the laborers. Arendt writes:

> Labor implements are drawn into this rhythm until body and tool swing in the same repetitive movement, that is, until, in the use of machines, which of all implements are best suited to the performance of the *animal laborans*, it is no longer the body's movement that determines the implement's movement but the machine's movement which enforces the movement of the body. (p. 146)

In other words, tools, by nature, become a part of the user's bodily rhythm in use, becoming what Merleau-Ponty describes as the "extension" of the lived body, whereas it is the machine that determines the phase or rhythm of the "labor" process, forcing the user to adjust to the parameters set by the technical composition of the machine. But only by becoming attentive to the meaning of lived experience of writing will we be able to disclose the existential difference between writing in the "old" way and writing on a word processor.

Loss of a sense of continuity

The idea of screen-writing seems to have an instant appeal to many people, including writing specialists. Aside from getting rid of all the messy paperwork that usually goes along with writing on paper, many people believe that writing directly on the screen will eliminate or reduce the well known fear of the empty page. On the screen you have only a blinking cursor and letters that last only as long as you wish. On the screen, many writing specialists say, the text is not carved in stone! The writer can feel free to put things down as they occur since everything can be reworked or used in some other context later. On the screen, the writer has a fluid text! There is a certain immediacy associated with screen writing. Still, one of the most frequent complaints about word processors is the absence of paper in the process of writing. Author William Zinsser (1983) writes:

> I was particularly worried about the absence of paper. I knew that I would only be able to see as many lines as the screen would hold -- twenty lines. How could I review what I had already written? How could I get a sense of continuity and flow? With paper it was always possible to flick through the preceding pages to see where I was coming from -- and where I ought to be going. Without paper I would have no such periodic fix. Would this be a major hardship? (p. 97)

Here we are reminded of Walter Ong's theory (1982) that all thought requires some sort of continuity and that writing, i.e. the book, establishes outside the mind the continuity necessary for the most complex and sophisticated thoughts. The book, or sheets of paper, allows the writer to "go back" and review, previous accomplishments. Viewing the text on the screen is not the same as the act of browsing through real pages. A university professor comments:

> And I think this [loss of continuity] happens because I think of producing a paper in spatial terms. And I have in my mind the appearance of the work on paper, paper that's marked in many different ways, I mean, it might have ink stains on, or coffee stains on one page. One page would look spatially different from another because of the organization of the paragraph, and so on. And I have that in my mind as I'm going along, so that when I'm stopped in the middle of the paper, it doesn't help me look at the outline but it

> helps me to sort of pick up the sheets of paper and glean through them again and it gives me a sense of where I've come from and where I'm going. And I don't have that on the computer because everything is in a sense uniform and one page, as it is on the screen, is pretty much the same as any other. (Inteview, January 1985)

This loss of sense of continuity affects the whole process of writing. Most users remark that they need to make card copies all the time when writing directly on the screen. It even affects the fancy editing capabilities of the word processor. My interlocutor continues:

> Without this sense of the whole continuity of the work, the ease of changing was so great that I would spend hours fiddling with a couple of sentences, without really making any substantial change at all. So I would change a word and then I would continue on and I think, no, that word isn't right and I would go and change it back to what it was before or change it to a third word, or take a clause that was at the end of a sentence and move it to the beginning of the sentence, something like that. (Interview, January 1985)

Computer manufactures have attempted to find a solution to this problem by so-called "multiple window" screen or "splitted screen," a screen that allows the writer to work on two or more documents at the same time or view two parts of the same text at the same time. However, it is questionable that scrolling back and forth on a computer screen, or viewing two equally small sections of the text on the screen, will ever compensate for browsing through sheets of paper.

It seems that the absence of paper has often the opposite effect from what writing specialists expect. I have heard from teachers who maintain that young writers are less willing to revise their text on the computer, suggesting that young students find the text somehow less real on the screen than on paper. Similarly, Jeanette Harris (1985) found that contrary to the students' own expectations (as expressed in her interviews with them), and to the claims made by other researchers, the students made fewer revisions when they used word processing than when they did not (p. 325). Most of her subjects were unable to revise on the computer, requiring printouts on which to work. One of these students commented:

> It's awfully hard to me to look at the screen and want to edit anything. My paper seems so far away, almost abstract. It's not concrete like when it sets

> on the table in front of me. I almost feel like it's too far away for me to work with. This feeling is hard to describe, but it's so real it makes the whole rewriting difficult. There's something about not being able to use pen and pencil that changes everything. Typing a first draft into the thing somehow seems so final -- as if it does not lend itself to change. (p. 327).

Harris comments that she saw no evidence among the subjects in her study to support the claim that students are more likely to experiment and take risks when they use word processing. She also make the point that the inability to reread what has been written on the machine may account for the large number of printouts required by most writers who use word processing and, even more likely may account for the difficulty most writers have in composing on the screen (p. 329). We need therefore to consider the meaning and significance of the traditional way of writing, including the significance of the physical act of writing out longhand.

Lending a hand to thinking

Many authors explain that writing out longhand gives them a stronger relationship to the physicality of writing, a deeply felt bodily awareness, which perhaps explains why first drafts often find their way through handwriting. Elizabeth Bishop (1984) says in an interview that she can write prose on a typewriter but not poetry; for poetry she uses a pen. By the same token, Roland Barthes (1985) writes that he "loves scripting, the action by which we manually trace signs." Barthes' writing has two stages: first comes the moment when desire is invested in a "graphic impulse," producing a calligraphical object; then there is the critical moment when this object is prepared for the anonymous and collective consumption of others through transformation into a "typographic object" (p. 179). And Rebecca West (1985) says that her memory is in her hands and when anything important has to be written she has to use a pencil (p. 23). Sometimes it takes a special event to discover the significance of the body in the process of writing. Pablo Neruda (1981) writes:

> Ever since I had an accident in which I broke a finger and couldn't use the typewriter for a few months, I have followed the custom of my youth and gone back to writing by hand. I discovered when my finger was better and I could type again that my poetry when written by hand was more sensitive; its plastic forms could change more easily. In an interview, Robert Graves says that in order to think one should have as little as possible around that is not handmade. He could have added that poetry ought to be written by hand. The typewriter separated me from a deeper intimacy with poetry, and my hand brought me closer to that intimacy again. (p. 59)

The pencil is somehow experienced as an "extension" of the writer's body. To recall O'Neill's comment, the mind, the body and writing constitute a whole, "a structure," that cannot easily be broken up into separate parts. Or as van Manen (1984) points out, writing is a deeply reflexive activity that involves the totality of our physical and mental being (p. 68). So in the phenomenological sense, the poet's fingers already participate in thinking! Isn't it obvious when we look at such activities as piano playing, typing, or painting, that our "physical" gesture embodies a great deal of thought and skills.

It is indeed very common among writers to explain that there is something fundamentally "physical" about writing. James Thurber (1983), for instance, used to have the sense of thinking with his fingers on the typewriter (p. 87). And Francoise Sagan (1983) says that her novel *Bonjour tristesse* started with the idea of a character, a girl, but nothing came of it until her pen was in hand. The novelist William Goyen (1984) said in an interview that the world he writes about has already been created, somehow, in physical sensation before he goes about writing it. "My writing begins physically, in *flesh* ways," he says, "the writing process, for me, is the business of taking it *from* the flesh state into the spiritual, the letter, the word" (p. 203). And the French critic and essayist Roland Barthes, more than anyone else has drawn attention to the pre-intellectual, "bodily pleasure" of reading and writing, and that writing, more than anything else, is the product of "appetite." The words "pleasure," "bliss," "happiness," etc., recur in his works with a weight that is both voluptuous and subversive (Sontag, 1982, p. xvii).

I have pointed out how a number of writers associate handwriting with special mood or with the expression of certain meanings. Can we conclude that in this age of mechanical reproduction of written material there still exist a plea for handwriting? It is well known that writing used to be a highly ritualistic activity, even a sacred gesture, whose task was to copy religious text -- "handing down" the religious tradition. And the act itself, the copying, required the most intense meditative concentration, poise and steadiness of the hand, as well as the virtues of patience, devotion and humility. Manipulation of the inscribed symbols as manuscript -- both terms containing as a component the Latin word for hand -- was a special kind of handiwork. To every signifying mark which appeared on the surface of the text there corresponded a gesture which brought it forth -- a gesture embodying the above virtues. But even in the absence of this need to recopy by hand religious texts, writing continues to be highly ritualistic, embodying many of the "virtues" it had in the Middle Ages. Donald Murray (1982), a writer and a teacher, writes:

> Most writers are compulsive about their methods of work -- the writing hours, the special lapboard, the texture of the paper, the blackness of the ink, the grip of the pen. I believe this is, in part, because they feel a primitive awe before their tools. Something happens as the pen point scratches against the paper that they cannot quite explain. Words, scenes, ideas, phrases, characters, concepts, appear unbidden when the writing is going well, and the writer, surprised, must rationalize these accidents, accept them or reject them, control them and use them. (p. 4)

Perhaps we need to pay more attention to the meaning of writing as a ritualistic activity and particularly to handwriting as the *embodiment* of certain kind of thinking and mood? It must be very different to sit down to write knowing that everything you put down is easily amenable to changes as is the case when writing on a word processor. We saw how many writers have attributed great importance to the physical resistant materials as they affect their writing consciousness.

Traditionally, handwriting shows itself to be a gesture embodying graceful and deliberative thinking, the kind of thinking Heidegger (1969) associated with the Old

English noun *thanc*, i.e. thankful thinking. The hand is related to personal care and personal expression. Word processing, on the other hand, snatches script from the essential realm of the hand -- and this means the hand is removed from the essential realm of the word. The word becomes something "typed." In *Electric Language* (1987) Michael Heim explores the psychic framework inherent in modern word processing Heim writes:

> Insofar as managerial and calculative modes of thought are inherent in word processing, they effect a constant pull away from the focus of the idea in formulation. Calculative power can distract from contemplative thought even, and perhaps especially, when it has become second nature. Manipulative control requires a certain inner distance. What was once operative in physical resistance is transformed into the mental energy required for computerization. Whereas the culture of the book, especially in its scribal phase, emphasized the physical confrontation and transformation of resistance, digital writing supplants the physical confrontation with a different kind of thinking. (p. 204)

Heim points out how the idea-processing software supports brainstorming, fact compilation, organization, and reorganizing in ways that go far beyond the notebooks, index cards, blackboards, and appointment books of the precomputer world. As life without electric lights now seems mean and backward, Heim says, so writing without computers is primitive and crude. Compared to working with traditional materials, many writers feel that writing on a computer feels like speedwriting, on a parallel with speedreading. The book, on the other hand, produces a different kind of trancelike state where concentration and inner suggestibility are heightened. With the book, deep recesses of mind are reached through contemplative concentration and the sustained suggestions of stable symbols (pp. 205, 206).

All this seems to have relevances, not only for mature students but also for early childhood education. Child psychologists have frequently pointed to the pedagogic significance of this intimate relationship between thought and physical experience. A number of psychologists have illustrated for instance how the child's first concepts are really corporeal schemata of com-prehension formed in the process of grasping and manipulation. A number of researchers (Dyson, 1982; Graves, 1979; Vygotsky, 1978) have also demonstrated the close association that exists between children's drawing or scribbling and their first attempts to write. Both drawing and writing, as Vygotsky (1978) has stressed, has a role in the history of the child's ability to symbolize. In fact, it has been found that the letters of the alphabet first appear as art forms in children's drawings (Kellogg, 1970). We can therefore ask ourselves how important the "physical" gesture of writing is for the child's sensory development? In her autobiography, writer Eudora Welty (1984) expresses her gratitude to her parents for introducing her into knowledge of the *word*, into reading and spelling, by way of the alphabet. She then describes the many ways by which her "physical awareness" of the word grew out of her everyday experience. The following incident is one of many we find in her book:

> At around age six, perhaps, I was standing by myself in our front yard waiting for supper, just at that hour in a late summer day when the sun is already below the horizon and the risen full moon in the visible sky stops being chalky and begins to take on light. There come the moment, and I saw it then, when the moon goes from flat to round. For the first time it met my eyes as a globe. The word "moon" came into my mouth as though fed to me out of a silver spoon. Held in my mouth the moon became a word. It had the roundness of a Concord grape Grandpa took off his vine and gave me to such out of its skin and swallow whole, in Ohio. (p. 10)

One cannot but wonder to what extent such experiences are fostered by the practice of scribbling and writing. And then one can ask, does it matter whether children learn letters by "drawing" them or whether they learn them by "printing" them on a typewriter or a computer screen? Does typing, and the computer screen, reduce the sensory experience of the letter? Welty, in her book, also tells of an early experience of an art class in which she drew daffodils that had just been picked out of the yard. She then describes how her sharpened yellow pencil and the cup of yellow daffodils gave off whiffs just alike. That the pencil doing the drawing should give off the same smell as the flower it drew seemed to her to be part of the art lesson. Is it possible that typing brings about the same sort of erosion of the world (word?) as mechanical "drawing" on the computer screen?

This has direct metaphysical implications. Today, what is *true*, as Heim points out in his book, presents itself in the quest for greater productivity, better management and control, and increased organization through computer technology. However, one would expect that research into the pedagogy of writing would question the plausibility of the Nietzschian assumption, held by so many computer theorists today, that a primary characteristic of children's relation to the world is the "Will-to-Control." If this is so, then it seems as if the word processor is an obvious choice. However, if not, if the child's primordial relationship to the world is better described by words like "search for meaning," "losing oneself," and joining," then we might have to reconsider the current enchantment with computers as great for children (because they supposedly "free" them from the "burden" of handwriting). I believe that the present discussion has already pointed in many ways to the significance of handwriting for all age groups.

The writing situation

What about a writing place? Does the recognition of the bodily substratum of thinking and writing suggest anything of importance concerning the place in which writing is done and hence for our understanding of word processors? It has been noted that if one takes the idea that existence expresses an essential aspect of man (Luijpen & Koren, 1969), there can be no misunderstanding about the ontological status of the world. If human beings are fastened to the world, then the world is also fastened to human beings, so that it is impossible to speak about a world-without-human beings. This has various implications about the ways in which we describe human experience. Most of us, for instance, have preferences about the kind of places where we want to do things. There are good places for talking, reading and writing. Reading on a bus is certainly a totally different experience from reading in the favorite place at home. No one has shown better than the French philosopher and writer Jean Paul Sartre how the situation of man is most appropriately described in terms of "situations" instead of "milieus" or "environments." To be-in-the-world, according to Sartre (1966) means to *appropriate* the place in which we dwell. This means for Sartre that the way we live, and the things we possess, *represent* ourselves. A place for writing, for instance, cannot therefore be just any place. In *Being and Nothingness* (1966) Sartre writes:

> *My* lamp is not only that electric bulb, that shade, that wrought iron stand; it is a certain power of lighting *this* desk, *these* books, *this* table; it is a certain luminous nuance of my work at night in connection with my habits of reading or writing late; it is animated, colored, defined by the use which I make of it; it *is* that use and exists only through it. If isolated from my desk, from my work, and placed in a lot of objects on the floor of a salesroom, my lamp is radically extinguished; it is no longer *my* lamp; instead merely a member of the class of lamps, it has returned to its original matter. Thus I am responsible for the existence of my possessions in the human order. (p. 753)

One would therefore expect this to be an issue when decisions are made by people about a place for writing. The importance of the situation is well documented by writer Gabriel García Márques (1985):

> I have another problem in that I can only work in surroundings that are familiar and have have already been warmed up with my work. I cannot write in hotels or borrowed rooms or on borrowed typewriters. This creates problems when I travel I can't work. (p. 331)

For writer Ursula K. LeGuin (1986) the situation or the milieu is an important aspect of the possibility of writing. She points out that the pencil offers the freedom of mobility she needs for writing:

> I write longhand first in notebooks so that I can lie around on my bed or on the grass, and so on. You can't carry processors or electric typewriter out in the garden with you. Well, also, I'm 56, and there's a lot of habit involved. But I like notebooks. They're light and portable. I also like the process of revising. I revise the whole thing over and over, so a processor would be to me a highly expensive convenience that would come in rather late in the composition process probably. I may end up with one some day, because obviously they're a very fancy form of typewriter. (p. 22)

Other preferences concerning writing instruments are common. John Steinbeck (1983), for example, said that his choice of pencils lies between the black Calculator stolen from Fox Films and Mongol 2 3/8 F which is quite black and hold its point well --

much better than the Fox pencils. Pencils must also be round because hexagonal pencils cut his fingers after a long day (pp. 187, 188). A professor who bought himself a personal computer to use for word processing explains here the significance of the tools he used to use in the past:

> There was a certain kind of comfort in sitting down at my desk with the desk cleared off and with a piece of paper and actually holding the pencil in my hand, and feeling the pencil go across the page. All of that became very important to me in terms of writing, and the possibility of writing. And I got so that I could only use certain kinds of paper, and only certain kinds of pencils, and there was a period of time when, if I didn't have foolscap pads that were lined in a certain way, and if I didn't have just the pencils that I wanted, I couldn't write. I mean, I just couldn't do; it somehow didn't seem significant to me, important enough. It was like trying to paint a miniature with a wall paper brush, or something like that. It just seemed to be inappropriate. (Interview, Jan. 1985)

All this suggests that the nature of "withdrawal" in use is quite different between word processors and, say, pens and pencils. So, even if it is common to speak of "technophobia" in contemporary machine-based society, it still remains that a great number of people do not want to use machines they don't need to use. What is important to realize here is that for most writers the question of efficiency must be considered within the larger context of meanings and practices associated with writing. Like all human activities, writing is a *situated* activity that cannot easily be separated from its wider context of related activities. The same professor explains also that he discovered how the question of efficiency is always conditioned by a number of other things. The professor continues:

> Although there is a certain efficiency in doing it [writing class notes] on the computer, such that I can organize things better strike me as unimportant, it's turning out for me to be much quicker to actually work at the desk and write my notes. I think in part because the notes that I have are fairly sketchy, so I may just have one or two words down that would take up fifteen minutes of classtime. And the amount of efficiency gained by using the computer to write down one or two words that you're gonna take fifteen minutes to talk about in class, it just didn't seem worth it when I felt much more comfortable sitting at my desk with the book open and writing the notes out longhand. So I didn't want to give up that comfort for the sake of an efficiency that I really didn't need. (Interview, Jan. 1985)

This is one illustration of the fact that technology is never neutral and that any implementation of technology is a potential threat to the lifeworld into which the particular technology is placed. The tool, as Heidegger has shown, gets its meaning from a large context of related meanings and activities which, in daily use, remains largely hidden from the user. Anyway, preferences about tools are always preferences about a form of life, a context of related meanings and activities.

Conclusion

In what way, if any, does the foregoing discussion increase our understanding of the pedagogy of word processing? Are there any practical implication of what has been put forward here? Does handwriting really have a plea in times of mechanical reproduction of texts or is any such attempt simply a nostalgia which doesn't really belong to modern pedagogy? I believe that handwriting does indeed have a plea, even more so in times where mechanic[illegible] production and reproduction of texts are becoming commonplace. This is not because handwriting is difficult, but because it comes closer to a special *mood*, a mood that encourages *precision*, *patience* and artistic *sensitivity*. This is not to say that handwriting guarantees these qualities, but merely that it *favors* them.

This conclusion is particularly important in early writing education where it is important that young children make use of all their senses in learning. If it is true that drawing or scribbling is natural to young children, and that their first writing is an extension of their scribbling, it seems that handwriting must have a place in the curriculum. Mechanical production of letters and words is easy to master at a later point. In other words, one might argue that the mood fostered by handwriting has a clear pedagogical advantage at an early age over speed and efficiency. We have to realize that underneath the quest for speed and efficiency there lies a metaphysical vision that needs to be evaluated. If it turns out that there is indeed some sort of "correspondence" between mind and the physical act of writing, as both writers and philosophers argue, then we need to explore the psychic framework associated with word processing and perhaps reconsider the pedagogic value of handwriting. Up till now researchers have been occupied with improving writing instruments with respect to speed and efficiency, but is there less reason to consider writing practices and tools that favor "thoughtful" (thankful) thinking?

Writing is also *ritualistic* in many ways and for most writers the experience of writing is inseparable from the way in which writing is conducted. It is not only the choice of writing tools that concerns writers but also the place and the time. To understand the meaning and significance of word processing we must come to a deeper understanding of the significance of the various dimensions of writing as a certain type of a *praxis*. To write means to undertake a special kind of task which is both ideosyncratic and very personal. What applies to one writer may not at all apply to the next. So even if word processing opens up the possibility of making the process of writing in schools more public and more open for inspection and criticism, it does not follow that this is something schools would necessarily want to make much of. Perhaps it would be wiser to go slowly and take more notice of the solitary nature of writing. There is nothing which says that writing needs to become more public or social in the sense described above. To act tactfully in the area of writing and computers means to act on the basis of a thoughtful understanding of the nature of the experience of writing.

D. Writing Means Finding a Topic

> In the first generation of electronic Socratic dialogues, the computer program presented questions, provided explanations, allowed writers to write on a computer terminal, and printed a transcript of the interview.
>
> (Burns, 1984, p. 30)

That to start writing is difficult, I believe, is generally recognized. Even writing a letter is at times quite difficult to accomplish. How do I start? What shall I write? How shall I write? Those are all questions most of us are familiar with. In schools, students of all ages are asked to write and in order to reduce some of the difficulties of starting to write they are given a list of "topics" to choose from, ranging from "Abortion" or "Capital punishment" to "Summer vacation." But even then, students find it difficult to begin to write. Teachers of writing have known this for long time and recent textbooks in the field suggest various heuristic devices that are meant to help the writer to begin, including such activities as "outlining," "note-taking," "brain-storming" and a creation of a "thesis statement." Many of these heuristic devices are based on the Socratic assumption that we know more than we think and that special methods are needed to "recollect" this knowledge. Collette Daiute, the author of *Writing and Computers* (1985), gives an excellent illustration of this idea:

> Writers' main source of information is the knowledge in their own minds, and people often know more than they think they know. The idea that we have to search for knowledge in our minds may seem odd, but knowledge is stored in complex patterns, so it may not always be easily accessible. Therefore, writers have to learn strategies for retrieving information from their internal libraries. They need guides that they often have to create for themselves. (p. 74)

In recent years, researchers in computerized writing have begun to explore possible ways in which the computer might be able to reduce some of these difficulties. Some of these ways consist primarily in exploiting the standard editing capabilities of most word processing programs, pointing out how writers are able to make lists or outlines, change or expand such lists, make their own "data-bases" that can then serve as an information-bank for them, or how writers may just turn down the visual images on the screen in order to avoid the visual feedback of their writing.

"Interacting" Writing Instrument

A particularly interesting conception of an application of computers is found in the various "prompting programs," interactive programs, that have been designed and made available to buyers in recent years, programs such as TOPOI, SEEN, WORDSWORTH II, and WRITER'S HELPER. The underlying idea is to "stimulate" or "organize" the writer's thoughts by "guiding" his or her writing with "conversational prompts." It is argued that the computer is more efficient for prompting than lists on paper or notecards because computer prompts can be presented individually when the writer requires them. For this reason, many researchers see these programs as an important step towards an individualization of writing instruction (Rodrigues and Rodrigues, 1984).

How can writing equipment function as an "idea processor" or a "thought stimulator"? Major Hugh Burns, the founding father of prompting programs in writing instruction, has created a computer program that guides high-school or college students starting of an essay by providing suggestions to the writer in what he calls the "prewriting" stage. The author explains that he wanted to create an artificial on-line situation in which writers would exercise with specific methods of inquiry -- a kind of mental "fitness center," software moments replicating heuristic tensions that would result in information, perspectives, and insight about any topic. He also hoped to assist writers in discovering how they begin writing, i.e., formulate a method of thinking or approaching a topic (Burns, 1984). In what follows, we shall look at an excerpt from a "prewriting" session where a student, called Wally, explores his subject. I shall include some of Burns' comments following each interaction. In the following example, the student's responses appear underlined.

NOW I NEED TO FIND OUT WHAT YOU ARE WRITING ABOUT, SO WOULD YOU PLEASE TYPE IN YOUR SUBJECT. I AM LOOKING FOR ONE TO THREE WORDS.

PROTEST AGAINST MATERIALISM

HEY, THAT'S NEAT, WALLY. WE'LL HAVE A GOOD TIME THINKING ABOUT PROTEST AGAINST MATERIALISM.

("After the student enters his or her topic, the program then offers a bit of encouragement or humor. In this case, the program has a file of three remarks, and only one is randomly selected and printed on the CRT -- "Hey, that's neat ...")

A COMMENT ABOUT PURPOSE: DURING THIS EXPLORATION PROCESS, YOU WILL BE ASKED TO CLARIFY THE PURPOSE OF YOUR PAPER ON PROTEST AGAINST MATERIALISM. SO NOW WOULD YOU BRIEFLY DESCRIBE WHAT THE PURPOSE OF YOUR PAPER IS BY COMPLETING THIS STATEMENT: THE PURPOSE OF THIS PAPER IS TO .... (LIMIT: ONE LINE)

EXPLAIN HOW THE MYTHS ABOUT MATERIALISM COME ABOUT AND HOW IT HAS IMPROVED THE WORLD

ANYMORE? (IF SO, TYPE WHATEVER IT IS. IF NOT, TYPE 'NO'.)

NO

FINE, WALLY, YOU AND I WILL TALK AGAIN ABOUT YOUR PURPOSE

("At this point, the program simply collects the writer's first intentions. The concept of asking writers whether they have anything else gives them another line to clarify their purposes. Many students at this point will complete the first statement with these words: 'Pass this darn class and get on to more important things.'")

RELAX NOW, WALLY, AND ENJOY THIS BRAINSTORMING SESSION. WHAT SPECIAL EXPERIENCES MADE YOU SELECT PROTEST AGAINST MATERIALISM AS YOUR TOPIC?

THE STUDY OF MEDIEVAL MAN, THE WAY IN WHICH HE WAS LED TO BELIEVE AT THE TIME, THE INFLUENCE OF THE CHURCH.

THAT'S THE IDEA, WALLY. GIVE ME SOME MORE INFO NOW.

TAKING IT FROM THE FALL OF ROME THRU THE MIDDLE AGES, AND MODERN EUROPE. GIVING EXAMPLES OF IDEALS.

TERRIFIC, WALLY. ANYTHING ELSE? (YOU CAN ADD MORE INFO, ASK A QUESTION, OR GIVE A COMMAND-WHATEVER YOU WISH.)

THE ACQUISITION OF MATERIAL WEALTH WAS LOOKED UPON AS A SIN AND EVIL. CORRUPTING THE SOUL AND MIND.

OKAY. (I REPEAT QUESTIONS IF YOU TYPE "REPEAT.")

("I think the power of the heuristic approach is confirmed if the writer feels a needs to elaborate in response to a written question, as if the question were higher in the cognitive domain. Each time Wally finished his response and pressed the return key, the program attempted to "understand" his remark by looping through a "semantic stab" subroutine which I will explain in more detail later. In the dialogue above, this routine does not recognize what Wally has typed; consequently, the program prompts the inquiry only with motivational responses.")

WE ARE MOVING RIGHT ALONG. HERE IS QUESTION B. WHAT COULD BE CONSIDERED A RESULT OF PROTEST AGAINST MATERIALISM? EXPLAIN THIS QUESTION IS ABOUT CAUSES AND EFFECTS. BUT YOUR ANSWER SHOULD JUST MENTION THE EFFECTS, THE RESULTS, THE OUTCOMES OF PROTEST AGAINST MATERIALISM. FOR EXAMPLE, IF I WERE WRITING A PAPER ABOUT EXERCISE, I WOULD WRITE ABOUT A STRONGER HEART, A NEWFOUND ALERTNESS, AND ANOTHER WAY TO SPEND MONEY (JOG TENNIS RACKETS, BICYCLES, WEIGHTS, ETC.) YOUR TURN, WALLY.

THE STIFLING OF PROGRESS. TECHNOLOGY HAMPERED BECAUSE OF LACK OF MATERIAL. WEALTH IN CAPITAL.

I LIKE YOUR REASONING. GOOD WALLY, ADD TO YOUR RESPONSE

NOW IF THERE IS NO CAPITAL, THERE IS NO INVESTMENT, NO PRODUCTION, NO PROGRESS.

OUTSTANDING, WALLY. ANYTHING ELSE?

NO

OKAY. (SEE IF YOU CAN USE SOME MORE ACTION VERBS IN YOUR RESPONSE.)

("..in this sequence Wally used the word *because* and was branched to a remark that complimented his reasoning skill. The key-word routine does not understand Wally's reasoning process, only that he used the word *Because*, a simple clue that he has subordinated one idea to another. Small stuff, perhaps, but his next induction seems to follow nicely.")

HERE IS YOUR NEXT QUESTION-NUMBER 12. WHAT FACTS ARE YOU UNLIKELY TO KNOW ABOUT PROTEST AGAINST MATERIALISM?

WHAT WAS THE INTENT OF THE CHURCH TO KEEP MAN FROM ACQUIRING WEALTH

GOOD, WALLY. ADD TO YOUR RESPONSE NOW.

AFTER ALL THE CHURCH DID IT, WHY COULDN'T MAN?

WELL, WHY NOT? REMEMBER WE ARE EXPLORING, BRAINSTORMING

TRUE, THE CHURCH DID NEED WEALTH IN ORDER TO ACQUIRE POWER IN ORDER TO RULE.

SUPER, WALLY.

("Aristotle liked this question; it is a tough one to answer because *we don't know what we don't know*. But if writers have answers, what then? Wally answer this question, admitting some ignorance but also defining a direction for his research. In his elaboration, he asks a 'why' question about the content of his topic. Of course, the software knows nothing about Wally's interest in materialism, but has simply been programmed to answer all 'why' questions with a 'why not?' In this particular run, the 'why not' response continues his inquiry, for Wally answer his own question with 'True ...' I'm surprised how often a semantic miscue or, in this case, a stalling tactic in the program twists the electronic dialogue but still makes sense to the user ... When Wally finished, he left the computer lab with his computer-assisted dialogue -- 14 pages worth. And, more than likely, he was still thinking about the correlation of power, money, and ideal faith."). (pp. 18, 23)

The number of such "dialogue" programs is rapidly increasing and a number of researchers (Daiute, 1984; Kiefer, 1984; Rodrigues & Rodrigues, 1984; Schwartz, 1984; Wresch, 1984) are beginning to explore ways to guide students through different phases of the writing process by means of such and similar programs. It is therefore necessary both to consider the meaning and significance of the particular aspect of the writing process in question and the meaning of "dialogue" that is presupposed here. What, for instance, does it mean to "find a topic" to write about?

Writing Means Being Responsive

Before commenting on this incredible "dialogue" between Wally and Burns' program, we shall consider for a moment what it means to "find a topic." How does the author decide what to write about? How does an idea come to a writer? The most common contemporary understanding of *topic* in writing instruction is "subject for writing about."

But does "finding a topic" merely entail an identification of an "interesting" subject to write about? Or is it, as sometimes suggested, perhaps a question of "retrieving" from memory, by means of brainstorming technique or other heuristic devices, something we know somewhere in our brain? (Daiute, 1985). Or is it a question of developing a "thesis statement" in order to either support of refute it? It is true that in *Rhetoric* Aristotle introduces the notion of topics (*topoi* or commonplaces). By *topoi* (Greek for "places") Aristotle means not a list of subjects, but ways in which arguments applying to any subject can be discovered. In Book Two of the *Rhetoric*, Aristotle illustrates twenty-eight *topoi* for inventing enthymemes. Hence, in the ancient Greek rhetoric the *topoi* represent lines of inquiry -- such as arguing from opposites, from cause and effect, from the definitions of words, from part to the whole, and so on. These discovery procedures receive further elaboration in Aristotle's *Topics*, a work which Cicero later interpreted to include topics-as-subjects as well as topics-as-methods-of-inquiry. Much later, in Renaissance England, the *topoi* came to mean "commonplaces," subjects to write about (Lindemann, 1982, p. 39).

Many textbooks, and certainly classroom practices by and large, suggest that finding a topic is primarily a methodological problem, a question of finding the right method for developing a thesis statement or retrieving some hidden knowledge of a given subject from memory. And researchers and software designers in the field of computerized writing have by and large adopted this attitude towards this question and sought to create various types of heuristic devices, methods or tricks, to facilitate the process of finding a topic. But we have to ask ourselves about the extent to which this problem is really a methodological problem. How does an idea come to us? What can be learned from novelists, essayists and poets, whose craft depends to a large degree upon a solution to this problem?

A study of professional writers suggest that instead of speaking of a "topic" or a "subject" in relation to literary works, we should rather speak of a *germ* of a story, a poem, or a scientific hypothesis. It is truly a germ because it is not yet something writers just "write out." As Katherine Anne Porter (1983) once put it, "You are not thinking in images or words or -- well, it's exactly like a dark cloud moving in your head. You keep wondering what will come out of this" (p. 154). A germ of a story need not be anything "interesting" by itself. A germ of story can be anything; something seen or heard, or heard about, or suddenly remembered. But it must be something that *touches* the writer, and in certain ways. Boris Pasternak (1983) says that the greatness of a writer "has nothing to do with the subject matter itself, only with how much the subject matter itself touches the author" (p. 134). It may be a remark casually dropped at the dinner table by a friend, or again, it may be the look on a stranger's face. Explaining how his novel *The Sound and the Fury* did begin, William Faulkner (1983) says:

> It began with a mental picture. I didn't realize at the time it was symbolical. The picture was of the muddy seat of a little girl's drawers in a pear tree, where she could see through a window where her grandmother's funeral was taking place and report what was happening to her brothers on the ground below. By the time I explained who they were and what they were doing and how her pants got muddy, I realized it would be impossible to get all of it into a short story and that it would have to be a book. And then I realized the symbolism of the soiled pants, and that image was replaced by the one of the fatherless and motherless girl climbing down the rainpipe to escape from the only home she had, where she had never been offered love or affection or understanding. (p. 130)

Another novelist, Joyce Cary (1983), tells a similar story of the germ of *Prisoner of Grace*.

> It's an island and I went round on a steamer with an American friend, Elizabeth Lawrence, of Harper's. And I noticed a girl sitting all by herself on the other side of the deck -- a girl of about thirty, wearing a shabby shirt. She was enjoying herself. A nice expression, with a wrinkled forehead, a good many wrinkles. I said to my friend, "I could write about that girl -- what do you think she is?" Elizabeth said that she might be a schoolteacher taking a holiday, and asked me why I wanted to write about her. I said I didn't really know -- I imagined her as sensitive and intelligent, and up against it. Having a hard life but making something of it, too. In such a case I often make a note. But I didn't -- and I forgot the whole episode. Then, about three weeks later, in San Francisco, I woke up one night at four -- I am not so much a bad sleeper as a short sleeper -- I woke up, I say, with a story in my head. I sketched the story at once -- it was about an English girl in England, a purely English tale. ... Some days later, in a plane -- ideal for writing -- I began to work it over, clean it up, and I thought, Why all these

> wrinkles? that's the third time they come in. And I suddenly realized that my English heroine was the girl on the Manhattan boat. Somehow she had gone down into my consciousness, and came up again with a full-sized story. And I imagine that has happened before. I notice some person because he or she exemplifies some part of my feeling about things. The Manhattan girl was a motive. And she brought up a little piece of counterpoint. But the wrinkles were the first crude impression -- a note, but one that countered too much in the final writing. (pp. 63, 64)

The germ of a story, according to this view, is not something that one "finds," neither "within" oneself or anywhere "in" the world. Rather, it is something to be seen or noticed, something that affects the writer in a way that makes it somehow worth writing about. A theme, Frank O'Connor (1983) says, is "something that is worth something to everybody" (p. 180). It is often a new and simple element introduced into an existing situation or mood: something that expresses the mood in a new sharp detail: something that serves as a focal point for a hitherto disorganized mass of remembered material (Cowley, 1983, p. 7). But it requires attentiveness. Maupassant, for instance, has stressed how long and attentively the artist must look at everything around him in order to be able to write:

> Talent is a long patience. -- It involves looking at everything one wants to describe long enough, and attentively enough, to find in it some aspect that no one has yet seen or expressed. Everything contains some element of the unexplored because we are accustomed to use our eyes only with the memory of what other people before us have thought about the object we are looking at. The least thing has a bit of the unknown it it. (Quoted from Allott, 1980, p. 130)

At this point in the writing process it has been noted the writer may find himself in a state of generally intensified emotional sensitivity, when events that usually pass unnoticed suddenly move the writer deeply. But this is also a time of delay. This is the time when the "seed" is nurtured in the writer's body. Donald Murray (1978) writes:

> Over his writing desk, Franz Kafka had one word, "Wait". William Wordsworth talked of the writer's "wise passiveness". Naturalist Annie Dillard recently said, "I'am waiting. I usually get my ideas in November, and I start writing in January. I'm waiting." Denise Levertov says, "If ... somewhere in the vicinity there is a poem then, no, I don't do anything about it, I wait." (p. 375)

Perhaps "passivity" is not the right word here because in the period when the germ develops into something more definite -- a vision of a story, a research question, or whatever -- the writer is usually engaged in heavy meditation, note-taking, reading, talking, or something else relevant to his developing notion. For professional writers, or scholars, this can be a period from several weeks up to several months. This can mean a long time sitting in front of the empty page with the pen in the hand. Gabriel Garcia Marques (1985), for instance, says that the most difficult thing is the first paragraph. Marques writes:

> I have spent many months on a first paragraph, and once I get it, the rest just comes out very easily. In the first paragraph you solve most of the problems with your book. The theme is defined, the style, the tone. At least in my case, the first paragraph is a kind of sample of what the rest of the book is going to be. That's why writing a book of short stories is much more difficult than writing a novel. Every time you write a short story, you have to begin all over again. (p. 331)

And sometimes it takes the writer a long time, and lot of writing, to find the right *tone*. Marques continues:

> After *Evil Hour* I did not write anything for five years. I had an idea of what I always wanted to do, but there was something missing and I was not sure what it was until one day I discovered the right tone -- the tone that I eventually used in *One hundred Years of Solitude*. It was based on the way my grandmother used to tell her stories. She told things that sounded supernatural and fantastic, but she told them with complete naturalness. When I finally discovered the tone I had to use, I sat down for eighteen months and worked every day. (p. 323)

This rhetorical element in writing is not at all confined to literary works. This also characterizes all theoretical and scientific works. All theoretical or scientific works can be looked at as an attempt to deal with, solve, or raise, questions or problems that are worth the effort, requiring imagination and thoughtfulness. For writing means to *situate* oneself somewhere in relation to one's topic or question. And to situate oneself somewhere in relation to a topic means to *raise questions* about the topic that are worth exploring, adopting a *point of view*, a *line of thought*, or discover the *tone* appropriate to the task at hand. And for many writers, this is the most difficult aspect of writing to accomplish. So the problem of finding something to write about is not fundamentally a question of applying heuristic devices or certain methods. It is methodological only in the sense of designating the way something is approached. Or as McHugh et. al. point out in *On the Beginning of Social Inquiry* (1974):

> It is not that something becomes a topic for us by having something in common with something else but that we produce anything as a topic by dealing with it in terms of our version of inquiry. Anything can become a topic because anything can be inquired about. And the point of inquiring about anything -- about bias, art, or travel -- is not to describe bias, art, or travel, but to make reference to our commitment to inquiry. How we do analysis is shown by how we deal with these objects. (p. 12)

The problem of finding a topic, it seems, goes deeper than simply to apply heuristic devices to "retrieve" knowledge from our "internal libraries." It means thinking, not in the logical-rational sense so common today, but in the sense Heidegger (1968) traces to the original meaning of "thinking," as the gathering of all that concerns us, all that we care for, all that touches us insofar as we are, as human beings (p. 144). He reminds us that "memory" initially did not at all mean the power to recall. The word designates the whole disposition in the sense of a steadfast intimate concentration upon the things that essentially speak to us in every thoughtful meditation. Originally, "memory" means as much as devotion. More than anything else, writing requires *openness*. The writer has to learn to *listen* to the nature of things, to the sound of language as the clue to the meanings in the subject and the writer's relation to it. He or she needs to develop the ability to be *touched* by his or her experiences. And the "wise passivity" William Wordsworth speaks about suggests that what is required is thinking in the original sense of the word, that is, a thinking which carries within itself a certain gratitude, a spirit of attentiveness which Heidegger traces back to the Old English noun for thought, *thanc*: Heidegger (1969) writes:

> The *Thanc* means man's inmost mind, the heart, the heart's core, that innermost essence of man which reaches outward most fully and to the outermost limits, and so decisively that, rightly considered, the idea of an inner and an outer does not arise ... The *Thanc*, the heart's core, is the

> gathering of all that concerns us, all that we care fore, all that touches us. (p. 144)

Therefore, to say that one simply "finds," "chooses," or "organizes" a topic is to present a rather technocratic view of writing, a view mainly supported by mechanistic, report- and information-based writing and ancient rhetoric. Closer to the lived experience of writing would be to say that we are *chosen* by the topic. Nadine Gordimer (1985) writes: "I don't think any writer can say why he chooses this or that or how a theme impinges itself. It may have been around for a long time and then a stage comes in your life when your imagination is ready and you can deal with it" (p. 267). Robert Penn Warren (1983) even maintains that "You don't choose a story, it chooses you. You get together with that story somehow; you're stuck with it" (p. 195). And Joseph Heller (1981) says that "ideas come to me; I don't produce them at will. They come to me in the course of a sort of controlled daydream, a directed reverie" (p. 236). It is therefore clear that identifying an "interesting" topic is no solution here. In and by itself, no topic is interesting. A topic, as Pasternak has pointed out, is only interesting because it manages to touch us in certain ways, or in relation to interesting questions raised about the subject. Heidegger (1968) searches for the root meaning of the word "interesting" for an understanding of the phenomenon:

> Interest, *interesse*, means to be among and in the midst of things, or to be at the center of a thing and to stay with it. But today's interest accepts as valid only what is interesting. And interesting is the sort of thing that can freely be regarded as indifferent the next moment, and be displaced by something else, which then concern us just as little as what went before. Many people today take the view that they are doing great honor to something by finding it interesting. The truth is that such an opinion has already relegated the interesting thing to the ranks of what is indifferent and soon boring. (p. 5)

This is not to say, however, that brain-storming activities or note-taking are not often part of this process. On the contrary, many writers do something like this, take notes, write expressively as they explore their ideas, or plan an outline. The question, however, has to do with the extent to which these activities manage to create a possibility of finding-a-topic. Instead of suggesting this, it would probably be more accurate to say that they are simply part of this process and do not have much value of their own. Without a grasp of the intellectual and existential ground of the activity of "finding-a-topic," such activities as brain-storming or note-taking remain superficial and empty. From this we should though be able to see how superficial writing classroom assignments often are, even when students are "free" to choose their topic. The problem with all such "prewriting strategies," and consequently with all automatic computer responses that are based upon rhetorical ideas which emphasize the importance of such strategies, is that it does not have a firm foundation in the actual experience of writing. Furthermore, they are based on an old and, according to some authors, outdated rhetoric, a rhetoric that divides the writing process into separated "stages," usually the "prewriting" stage, "composing" stage, and the "revision" stage, which is supposed to develop in a linear manner from one stage to another. In *The Rhetorical Traditions and the Teaching of Writing* (1984) Knoblauch and Brannon point to some of the difficulties of this model:

> A little reflection should be sufficient to discover the limitation of the model. When is a writer clearly, restrictively "prewriting" and not writing? While taking notes or making an outline? Mustn't one write to create a note or plan? When thinking about a subject prior to writing something done? Perhaps, but what are the boundaries of this thinking? Suppose the thinking goes nowhere so that no writing follows, or suppose the writer just doesn't feel like writing afterwards: was it then not prewriting after all? Does thinking casually about the subject while brushing one's teeth constitute prewriting? Is life prewriting? (p. 89)

Here the authors draw attention to the superficiality of some of the distinctions and classifications so common in contemporary writing instruction. However, the proliferation of computer technology in recent years has given rise to another sort of conceptual problem. This problem has to do with the ways in which we choose to speak of ourselves and the world around us. Everyone can see how computer metaphors are increasingly saturating our everyday as well as theoretical discourse, gradually becoming a taken-for-granted aspect of our reality construction. Why would anyone otherwise choose to speak of a "dialogue" with a computer?

The "Responsibility "of Pedagogic Responses

If "prompting programs" are meant to be, as many believe, a first step towards an individualization of writing instruction, we need to consider the quality or the nature of such responses. What sort of "dialogue" are we speaking of here? What is the nature of the interaction between the student and the computers? This question is all the more important in times when we are witnessing profound changes in the meaning of such important terms as "thinking," "learning," and "teaching." Increasing number of authors are beginning to speak of these phenomena in terms of information: thinking as information processing, teaching as information transfer, and so forth. In his book *Computer Power and Human Reason: From Judgement to Calculation* (1976), Joseph Weisenbaum, computer scientist at MIT, tells about the shock he experienced as his language analysis program ELIZA became widely known. This program would be given a script to enable it to maintain a conversation about cooking eggs or about managing a bank account, and so on. The script that got Weisenbaum so upset was one which was called DOCTOR and played the role of a Rogerian psychotherapist engaged in an initial interview with a patient. As Weisenbaum argues, "the Rogerian psychotherapist is relatively easy to imitate because much of his technique consist of drawing his patient by reflecting the patient's statements back to him." Now, what happened when DOCTOR became widely known and played, and what caused the shock, was that a number of practicing psychiatrists seriously believed the DOCTOR computer program could grow into a nearly completed automatic form of psychotherapy!

Much the same thing is now happening in the field of writing. One might have wondered how anyone dares to characterize that which took place "between" the student Wally and the computer in the example given above as a "dialogue." It seems as if the application of computer technology in education forces educators to become much more attentive to the meaning of the basic terms of educational experience. In *Computers and Literacy* (1985) Anthony Adams writes:

> All teachers are familiar with the shy or reticent child whom it is exceedingly difficult to draw out in class. It may be that such a student is likely to feel less threatened by a "machine" than by a human teacher: we already know from clinical experience of some evidence of patients responding more honestly and easily to a computer taking a case history than to a family doctor. (p. 53)

In the computer age when computational metaphors are increasingly being used to describe humans, educators must become critical of the meaning of basic concepts in pedagogic discourse. For instance, they need to ask themselves questions like, "What is a dialogue?" "What is presupposed in a real dialogue?" Georges Gusdorf (1965) writes that dialogue is a "common labor." As a form of communication, dialogue is the breaking out of the limitation of the monologue. True dialogue, Gusdorf writes, presupposes an open and receptive attitude, as opposed to without ever giving an inch, and in which, as a last resort, the person ends up by playing hide-and-seek or by hurling insults in a desperate effort to have the last word (p. 103). Such a receptive attitude means that each person in the dialogue is open to the world of the other, willing to recognize the other's point of view. Hence, a "distinctive sign of man in dialogue is that he listens as well as he speaks, if not better" (p. 103). Authentic dialogue, then characterizes the encounter of men of good will, each of whom testifies for the other, not to himself alone, but to their common values. For this reason, Gadamer writes that the interlocutors are drawn by the "*logos*" of what is spoken about and no "exchange" theory of communication will adequately account for what takes place in a genuine dialogue.

Dialogue, then, presupposes a *will* to understand another person. The computer, on the other hand, does not understand. It's method of catching meaningless words or strings of words like "protest against materialism," "Wally," or "because," and feed them back in a context that sometimes, but not always, make sense to the student. It has nothing whatever to do with understanding or a dialogue. If anything it might be seen as an insult to the student's intelligence. In a sense, this procedure describes a psychopathic orientation, one which simply aims at giving such and such impression without any genuine concern. From an educational point of view, we are simply forced to reject any such "interaction" as having anything to do with human dialogue. To see this as a possible substitute to human response, of whatever quality, is to lose sight of the meaning of a real dialogue and the quality of educational encounter that any educational system must aim at. A genuine teacher's response to this, or any other task students are involved in, must be *responsible* and to be responsible [illegible] to attempt to come to terms with the uniqueness and personal nature of any educational experience. With respect to writing, this means that the teacher needs to attempt to understand the writer's intentions, his difficulties, his needs, grounded in an understanding of the educational significance of writing itself.

To speak of a "dialogue" with a computer is, as pointed out above, to lose sight of the human existential meaning of the term and the difference between genuine dialogue and mindless feedback to "abstracted" individuality. This difference can be explained in terms of psychopathy. The psychopathic nature of much of what has become known as "computer response" in the form of automated learning aids is well displayed in what has become known as "computer poetry" or simply "compu-poem," where the word processor is used to generate poetry. It is interesting to notice in this respect that in *Death of the Soul* (1986) William Barrett takes poetry as the ultimate limitation of mechanical intellect. On the other hand, in *Mindstorms* (1980) Seymour Papert offers an example of computer poetry, produced by a thirteen-year-old student Jenny. The "poem" produced by Jenny and the computer goes:

> INSANE RETARD MAKES BECAUSE SWEET SNOOPY SCREAMSSEXY WOLF LOVES THATS WHY THE SEXY LADY HATESUGLY MAN LOVES BECAUSE UGLY DOGS HATESMAD WOLF HATES BECAUSE INSANE WOLF SKIPSSEXY RETARD SCREAMS THATS WHY THE SEXY RETARDHATESTHIS SNOOPY RUNS BECALF HOPSSWEET FOGINY SKIPS A FAT LADY RUNS (p. 49)

What sort of poem is this? Or is this a poem at all? As Robert Sardello (1985) points out, most people would be inclined to say that this thing is not in any sense a poem, not even a failed poem. It is not, though, that there is a lack of rhyme or rhythm -- that is not necessary for a poem. It is rather that this poem does not compel any attention. It has no life of its own. The words of the poem do not speak to each other to make anything that speaks (p. 97). But even if one would fail to distinguish between a poem like this and a human made poem, we still have to recognize the importance of the difference. We have to look at how the poem is produced. The above "poem" was produced by inserting words into a programmed structure one by one. The program would accept some words and reject other until the structure was filled out. If, for instance, a noun was selected where the structure called for a verb, there would be some error message flashed on the screen and the "writer" would try again. But poetry, as Barrett argues, is more than mere manipulation of symbols: it is an act of human consciousness within time and history. If we take poetry seriously, Barrett says, if the experience of poetry is really a part of our life, then we do not merely read single poems.

> When the poet matters to us, when he really involves us, we read the body of his work -- or as much of it as we manage. The poet himself becomes a kind of spiritual presence in our life, a personality present to us through and within the poet. (p. 158)

The poet, to be able to write poetry, needs to have a grasp of the contemporary state of language, the idiom, that would be vital and charged for modern reader of poetry. And the poet is also related to the culture, to the past, to dead writers and their traditions, which makes historical consciousness essential to good poetry. So, even if the computer poem may have the "look" of a poem, it is an imitation that does not have the heart or the soul of a poem. The psychopathic nature of computer poetry lies in the fact that the child thinks that he or she is writing a poem. It makes the child feel important, like an adult who is actually doing something meaningful. Actually, while the child thinks it is writing a poetry it is effortlessly, without thought, exercising grammatical rules on nouns and verbs. Robert Sardello (1985) makes the following comment about what he calls the "psychology of the computer":

> The roots of psychopathy are found in the loss of care for the things of the world. Learning by the method of programming concentrates on three components -- the ego, the body, and an abstract sign on the computer screen. Seymour Papert names this sign a "turtle," which is no more than a kind of arrow on the screen that traces our geometric shapes according to computer commands. The programmer decides what he wants to construct, an operation of the ego, and relies on a vague memory of the body to determine how to move the arrow on the screen forward, backward, right, left, up and down. The object of computer learning is to remove the child from the actual world and to insert him into his own subjective processes where an imitation world is invented. A recent "Nova" television program devoted to the work of Seymour Papert provides a series of striking images of children learning to turn away from the world. (p. 99)

What, then, would be a "responsible" response to the problem discussed above? How can the writing teacher respond to the well known, "But I don't have anything to say" complaint? First of all, it seems obvious that the student must be given *time*, time for daydreaming, for dawdling, for writing drafts, rewriting them, *experimenting*, until they feel comfortable with their "topic." There must be a chance for those who write short and those who write long, for those who write many drafts and those who write few drafts. But more than that, we need somehow to foster their perception or awareness of things in the world, to listen to the meaning of things, to their significance. Ideas come to a writer, not because he has learned strategies for "retrieving" them from his mind or from libraries, but because he has trained his mind and his body to seek them out. Elliot Eisner (1985), a spokesman for an aesthetic emphasis in the life of the school, tries to see the significance of this view in relation to the "back to the basics" movement in modern education. He points out that children who do not learn to "see" will not be able to write, not because they cannot spell, but because they will have nothing to say. And if they are unable to "hear the cadence, tempo and melody of what they write, it is likely to be mechanical and stilted" (p. 175). So, at a time in which schools are being asked to narrow their focus, Elliot urges them to expand their focus (p. 175).

It is therefore no coincidence that in her auto-biography Eudora Welty (1984) divides her book into three main section, *Listening*, *Learning to See*, and *Finding a Voice*. There may perhaps not be any secure ways to guarantee this sort of learning but one would expect that this happens among other things by reading, talking, listening to stories, evaluating one's own writing in a non-formalistic way, and so forth. One of the major hindrances to this kind of learning, according to Maxine Greene (1982), is that too often teachers are schooled to think of students as reactive creatures, behaving organisms:

> Overaffected by the technical ethos, they are likely to focus on measurable or observable performance or to function according to what Ryle calls a "crude, semi-surgical picture of teaching as the forcible insertion into the pupil's memory of strings of occasionally approved propositions..." When the reward system of a school is geared toward guaranteeing certain predefined performances or the mastery of discrete skills, teachers too often become trainers -- drilling, imposing, inserting, testing, and controlling. (p. 81)

In other words, because of the technical and methodological emphasis in modern education schools often fail to appreciate many of the finer existential themes in the learning experience, experiences that may be necessary for a further development and maturation of students' abilities and interests. So, for the same reason that the teaching of research methodology is not likely to make great scientists, so will the teaching of writing strategies not create competency with words and expression. "seeing," "hearing" and "listening" are not something that can be learned simply through drill and practice.

Conclusion

Recent attempts to use word processing machines for thought provoking purposes must, on the one hand, be seen in the context of the role of heuristic devices and ancient rhetoric in writing instruction. As such, the design of "thought-provoking" programs are by and large based on a technocratic philosophy that defines most "problems" as problems of methodology, suggesting that the real problem is to find the right method. I have argued that the well known problem of "finding-a-topic," well known in writing instruction, is only minimally a methodological question. To find a topic means no less to be able to be open, thoughtful, sensitive and "care"-ful about the subject matter of one's writing. These qualities need to be *fostered* and not trained in any mechanical sense of the word.

On the other hand, the novelty of these attempts should not be overlooked. The idea that the student can engage in a "dialogue" with a computer, whose task is to help the student to develop his or her ideas, is clearly a revolutionary one. And there is no doubt that the sophisticated technical capabilities of computers will greatly enhance the possibilities in curriculum development. Educators need to be aware, however, of the danger inherent in the tendency to anthropomorphize the computer by speaking of a "dialogue," "thinking," or "communicating" when referring to what the computer does. This kind of talk is not just metaphorical: it speaks to the most fundamental context through which our understanding of educational practice is realized.

E. Writing is Composing

> Composition means "getting your head together."
>
> (Bruce Lockerbie, 1980, p. 86)

It seems, *a priori*, that the word processor is an excellent instrument for writing composition. To compose, according to standard dictionary usage, is to make up constituent parts of, to make or create by putting together parts of elements or to create or produce a literary or musical piece. The editing capabilities of the computer allow the writer to manipulate parts of texts in various ways. It allows the user to "move" text -- words, sentences or blocks of text -- around, "delete" those sections of the text that do not fit into the text, "alter" the text according to changing needs, and "insert" words, sentences or paragraphs anywhere the writer wishes. In this way, ideas can be developed through words, frames, graphs, or databases and then stretched, combined, and arranged as building blocks in almost infinite variety of ways.

These technical possibilities have not escaped the attention of theorists in the field of computerized writing. Probably no one doubts the convenience of these features but the important question is: What does this mean for writing composition? In *Orality and Literacy: The Technologizing of the Word* (1982), Walter Ong suggests that the computer optimizes analytic sequentiality by increasing the writer's control over the word. In what follows I shall attempt to come to some understanding of this and related ideas about the role of the computer in the composition process, keeping in mind that the computer's technical capabilities are still mostly theoretical rather than practical and that all "theories" about the computer in the writing process need to be tested against alternative views and the actual experience of writing. Writing researchers, however, have identified a number of ways in which the word processor may facilitate composition. One of the ways in which the computer is said to affect the composition process is by what is known as the "building-block technique" (Daiute, 1985). The idea is simply to take advantage of the editing capabilities of the computer by "throwing" ideas or notes onto the computer as they come to mind and "rearrange" the whole thing at a later point. Daiute (1985) writes:

> The computer's capacity to work on the same document in stages gives writers the freedom to mesh process and product. Using a word processing program, writers can compose sections as they come to mind or as they appear in an outline. In addition, they have the freedom to move sections or insert new ones while composing. In this way, writers can compose comfortably in sequential order, as thought and wording come to mind, but they can move the cursor quickly to place where the emerging text fits, type it in, and then continue typing at the place where the next topic to come to mind fits. (p. 101)

So, instead of first writing ideas, or references, down into a notebook, and then writing it out as a text, and finally putting it onto the computer, the building-block techniques allows the writer to do all this in two steps: first, collecting writing all ideas and references onto a computer file; secondly, arranging all these bits and pieces into one "text." And even after that it is always possible to change, add, delete, all according to the demands of the evolving text. So, with the word processor, the difficulty of getting started is less of a problem. Because the writer can begin anywhere in the text, then effortlessly (physically speaking) reorganize and restructure paragraphs. Word processing offers to many a cure for the notorious writer's block that arises from the fear of the blank page. Immediacy reduces the terror of writing, since the electronic screen can be continually revised and played with to reduce the "frozen self that appears on paper" (Heim, 1987, p. 207). My own notebook reveals the high expectations I had myself about this possibility at the time I was beginning to use the university computer for word processing:

> *September 22, 1983.*
>
> It seems to me that the computer is going to change the way I compose and reduce some of the time it takes me to write. Instead of writing everything down on cards, then (laboriously) trying to organize my ideas into some sort of whole, now I can write my ideas directly onto the computer, and all the quotations too, and create my text by moving the text back and forth until I have the text I am looking for. In this way the composition process will become much more accurate and (hopefully) more pleasant.

Another, but somewhat related, way to compose on the computer that computer researchers have identified is what has been called "incremental composing." Incremental composing, according to the author of *Writing and Computers* (1985), involves creating texts in several stages, starting from models and outlines which eventually leads to the composition of an original piece. Such models can either be ones design by the writer him or herself, such as when a student makes an outline of his or her thesis, or standardized document forms, such as the Business Letter, A Research Proposal, The Critical Essay, or various forms of professional documents. Then there are available special purpose word processing softeware that has built in the structure of an outline, inviting the user to give names to chapters and a number of different levels of headings. Many writing theorists believe that outlines are essential to the writing process for they force the writer to plan ahead and see model-writing as essential for preparing students for work in the professional world. In *Writing and Computers* (1985) Colette Daiute writes:

> College students are expected to write essays not only to master discourse forms but also to demonstrate their mastery of material in their courses, such as English literature and political science. Many colleges and universities have recognized that they can best help students improve their writing skills by preparing them for specific writing tasks they will encounter in graduate school or in their professions. Although professional documents include sections in the discourse modes, such as descriptions, persuasion, and argumentation, they also conform to unique characteristic outlines. The storage and interactive capacities of the computer can help students to learn and practice writing in report, articles, legal, and other formats. (p. 224)

The third way in which the computer may aid the composition process that needs to be mentioned here is the use of the database systems available to most computer systems. Now for many years there has been a widespread concern with the development of so-called "information skills" stressing the importance of helping children to find effective strategies for selecting, evaluating, recording and using information across the curriculum and at all ages. The primary advantage of databases lies in the possibility of collecting information from a variety of sources into one place with efficient delivery features. The writer can create his own database, containing various information he or she needs for the type of writing at hand. Besides simply storing information in files, these programs offer computer power for sorting and merging information according to topics. A student writer who has made database consisting of notes, ideas, and readings for a particular topic he is writing about might set up a database "field" for authors' names, for special types of work, dates of work, and so forth. In this way the writer can, during the composition of a text, ask for a list of authors who have written on a specific topic or works written in 1982. The program can be asked to sort the information or collect sections together in any order.

How do we respond to such claims as presented here? How do we evaluate these suggestions? In the previous chapter I suggested that in order to study word processing one would have to study the rhetorical ideas behind its design and use. So, a good point of departure to approach such and similar questions is to explore the notion of composition they embody. What understanding of "knowledge" and "writing" underlies the above concern with computers in the composition process? In other words, what rhetorical ideas are being presupposed here? What are these ideas going to mean for the experience of writing?

The Problem of Coherence in Writing

In their book, *Rhetorical Traditions and the Teaching of Writing* (1984), Knoblauch and Brannon argue that the rhetoric that underlies most of today's writing instruction, both in textbooks on writing and in classroom practice, is part of the philosophical perspective of antiquity concerning the nature of discourse, a perspective which gave meaning and definition to the concepts of classical rhetoric. Hence, to examine the Greco-Roman rhetorical tradition, they say, is to discover the deepest, earliest underpinnings of conservative writing instruction. They point out that from the fifth century, B.C. to the middle of the seventeenth century, A.D., over 2000 years, the systems of Greek and (later) Roman discourse theory dominated Western thought, profoundly influencing law, politics, education, literature, and other social institutions. And according to the authors, the major documents of the tradition, Aristotle's *Rhetorica*, Cicero's *De Invention* and *De Oratore* , the *Rhetorica ad Herennium* , Quintilians's *Institutio Oratoria* , rank with the Bible in their influence on European intellectual history, especially in light of their importance to education of youth until well into Renaissance (p. 22). Knoblauch and Brannon maintain that in spite of some attempts to develop new rhetorical standards in modern writing instruction that accord better with modern theory of knowledge, something that can for instance be seen in the so-called "process" approach in today's writing instruction, these attempts are constantly undermined by unacknowledged presuppositions deriving from the old rhetoric. A modern writing instruction, they say, must be based on contemporary knowledge of knowing, on insights gained over the last three centuries, and on insights into the actual process of writing.

A brief look at the major concepts of the Greek-Roman tradition may help us to understand more clearly contemporary writing instruction and the emphasis on "outlines" and "formats" discussed above. In the ancient theory of discourse we find the following distinctions: in the first category, ancient rhetoricians distinguished a variety of "situations" in which discourse might occur, and therefore, implicitly, a variety of "intentions" for writing; in the second, they differentiated the "shapes" or "forms" available for discourse; in the third, they studied different modes of discourse, including syllogism, antheymeme, deduction and induction; and finally, they considered the "order" in which discourse should occur. Of those four categories, Cicero's five stages theory of the last one is probably the most influential. The crafting of a particular text, according to Cicero, involves five "stages:" invention; arrangement; style; memory; and delivery, of which the two last ones do not apply any more. According to Cicero, the second compositional task, after locating arguments by means of "topoi," is arranging the arguments in some sequence which includes both an anticipation of the proper order of "parts" and also a judgement about which of the two possible strategies, synthetic or analytic arrangement, to select.

If we look at the "situation" category we find that in *Rhetorica* Aristotle defines three circumstances calling for persuasory discourse: deliberative oratory which was the mode of discourse appropriate to political assemblies; forensic oratory, which was appropriate to the law court and whose concern was to accuse or defend; and the epideictic, which was suited to ceremonial occasions such as marriages, funerals and testimonials and whose purpose was to praise or blame. But even if in all these cases "intention" receives only schematic treatment, presented as a generalized, static concept and associated with ritualized styles of speaking or writing, we find this rhetoric well alive in modern classrooms. Still today we find teachers of writing regularly assigning "persuasion essays," "argumentative essays," etc., and we find textbooks taxonomize writing along the lines of persuasion, exposition, argument, and so forth. And in the literature we find that James Kinneavy (1971), for instance, has subdivided writing into "expressive," "literary," "persuasive," and "referential" kinds, and James Britton (1970) in Britain subvides it into "expressive," "poetic," and "transactional." Knoblauch and Brannon (1984) argue that the classical concepts of this rhetorical tradition do not retain the same intellectual validity today that they enjoyed hundreds of years ago. Nor have they ever achieved teaching validity either in available research or in the experience of teachers. They are flawed, the authors say, because they do not accord with the evidence of observation and because they are rooted in an epistemology that separates the knower from the known, language and truth, and present a static view of the world and how knowledge comes into being. They write:

> Unlike the ancient intellectual world, which it has permanently displaced, this new world features a perpetual search for knowledge, where learning is an endless adventure in making sense out of experience, an exploratory effort in which all human beings are both teachers and students, making and sharing meanings through the natural capacities for symbolic representation that defines humanity. It is a world founded on this perpetual search, not on the authoritarian premise and unassailable dogmas of antiquity, not on the passive veneration of conventional wisdom or the declarations of privileged ministers of the truth. (p. 51)

Whether or not the modern intellectual world has "permanently replaced" the ancient intellectual world it remains that modern writing instruction needs to be grounded in a critically examined terminology, a terminology that accords with contemporary views of knowledge and what we have learned about writing. The first step, however, must be to examine the validity of the ancient terminology. It is natural that such examination begins with concepts that already have gained popularity in modern textbooks on writing. The influence of the Greek-Roman tradition is clearly seen, among other things, in the emphasis on different writing "forms" -- The Research-Paper, The Business-Letter, The Book-Report and The Critical-Essay -- as well as the emphasis on the construction of "outlines." After distinguishing occasions and aims of discourse, classical rhetoric discriminated a variety of acceptable forms or shapes for texts, compositional genres such as oration, tragedy, epic, satire, and so on. As Knoblauch and Brannon (1984) argue, the concept of genre both emphasized the distinction between form and content and also exaggerated the ceremonial nature of writing, its role in displaying the truth in one costume or another. But more importantly, the ancients viewed genres as fixed and eternal. The writer was expected to follow the rules "like the gymnast displaying interpretive gifts only within the rubric of acceptable parallel-bars routine" (Knoblauch and Brannon, 1984, p. 29).

Writing from outlines and frames

Using outlines in computer writing can both be done manually but also by using special purpose software designed for this particular end. In both cases the objective is to structure the text in a way that helps the writer during the composition process. In manual outlining the user usually begins by deciding on main section or parts, before or after notes have been taken, by writing down few words. As the text expands it is possible to delete numbers from outlines or rearranging the overall structure of the text. In special outliners the main thing is flexibility. The text on the screen becomes a dynamic pad where the writer can move heading and subheadings around and even hide large amount of text behind them. Additions can lead to changes in the overall structure of heading and the user can view hierarchical levels to any depth and the text can be expanded or collapsed in any order. In computer outlining viewing dominates over the verbal or the emergence of thoughts through "zooming" and "focusing."

The notion of an "outline" corresponds to the rubric of classical "arrangement" theory. The underlying idea is to predict an order of ideas without actually writing too much, assuming that the outline itself embodies just the pure, preverbal arrangement of ideas that ancient theory described (Knoblauch and Brannon, 1984, p. 35). For according to the ancients, after arranging the arguments in convincing order, the orator or the writer resorts to language in order to "flesh out" the vital outline which supposedly conveys the text's essential meaning. A study of the work habits of experienced authors, however, suggests that working from outlines is much more complicated than usually assumed and perhaps not as useful as the ancient theory assumes. The main reason being that writers find it very difficult to anticipate, at the beginning of the writing process, the whole structure of the emerging text. In contrast to merely consisting in "arranging" pre-defined arguments or knowledge into a logical sequence, the writing process turns out to be exploratory in nature.

Most experienced authors -- novelists, poets, essayists and scholars -- say that their works are only minimally "planned" in advance: "I know very dimly when I start what's going to happen," Aldoux Huxley (1983) writes, "I just have a very general idea, and then the thing develops as I write." And it often happens that the writer writes a great deal only to find out it just does not work and everything has to been thrown away. Alberto Moravia (1983) says that his work is "not prepared before in any way" and Francoise Sagan (1983) writes that she has to "start writing to have ideas." Even if the author starts from an outline or some sketches, in the actual process of writing he or she constantly reconsiders the initial plan, looks at what has been written, perhaps seeing new possibilities that were not anticipated, or discovering that parts of the initial plan do not fit into the evolving text. Often it happens that students who have been told to follow their initial plan become, in the process of writing, quite frustrated about this demand. This problem is clearly demonstrated in the following accounts from Marian Mohr's *Revision: The Rhythm of Meaning* (1984):

> I always know the basic idea beforehand I actually start writing but the development evolves while I'm writing. Often when I'm half way through I find that I have to change my idea, but there is always an idea before I start.
>
> grade 11

> My biggest problem in writing is not being able to think clearly about how to develop the main idea before doing it the wrong way.
>
> grade 13

> First, I make a serious attempt at organization. I begin with an outline which I have already begun forming in my head. However, I always try to write everything and it *Never* fits into an outline. So, I toss the outline aside and begin writing notes ... Once I have completed (or at least think I have completed) my notes I attempt to organize it into a rough draft. When I read over my outlines and notes I either feel great and know exactly what I am going to say in which case I immediately write my rough draft, or I am appalled by my jumble of words and feel I have a hopeless case.
>
> grade 12

> I write first and then outline it afterwards, so I don't have to worry about it.
>
> grade 10

> I just don't like outlines -- I think they're confusing.
>
> grade 10

Hence, to present the compositional process as consisting in matching what has actually been written with an initial plan is therefore to reduce the writing process to a mechanical, linear, and static process. The teacher who demands that students have a clear outline, prior to writing anything, and then evaluates the written text on the basis of how it matches the initial outline, fails to build his instruction on an understanding of the actual process of writing. In *The Timeless Moment* (1980) Bruce Lockerbie writes:

> One of the most serious hindrances to effective teaching of writing in our schools -- perhaps in our colleges and universities as well -- is the typical teacher's contempt for the mystery of discovery. How often was I told in writing courses that my outlines would be due on such a day and my essay, due sometimes later, would be checked against my outline. What madness! It makes as much sense as requiring Ferdinant Magellan to present a ship's log before his voyage. Most of the joy of sightseeing in a great museum can be spoiled by a too-fixed attention to the guidebook instead of allowing one's feet to wander where the eye leads. (p. 89)

Thus, what experienced writers tell us is that every writer is somehow caught in the *Proustian dilemma* of in some way knowing what he is going to write and at the same time being amazed at what is actually coming out -- to know basically what one wants to say, having control over the material, but at the same time to have the freedom of discovery and amazement. Or as Carlos Fuentes (1984) put it, "Proust only wrote when he had lived what he was going to write, and yet he had to write as though he knew nothing about it -- which is extraordinary" (p. 346).

It is not difficult to see, as Knoblauch and Brannon point out, that asking students to slot information into prefabricated boxes does not represent a first step toward improved organizational writing abilities. We need therefore to question this emphasis on superficial shapes of discourse, particularly when more profound aspects of writing are paid little attention. The result is that many people, including many teachers of writing, have come to believe that learning to write is equivalent to learning those structures, that teaching writing means insisting on formal correctness. We need to question this emphasis because too many teachers regard generic constraints, even to the point of making up pseudo-genres like the five-paragraph theme, as an end in itself as if non-sense written down in the authorized five paragraph shape is somehow preferable to non-sense written in three or seven (Knoblauch and Brannon, 1984, p. 32). Genres, one has to remember, are convenient public conventions that enable writers and readers to adjust quickly to each other for the sake of communication efficiency. They may facilitate conversion but they do not necessarily create the condition for the possibility of conversing. Here we are reminded of Gadamer's (1982) words:

> The "art" of writing in such a way that the thoughts of the reader are stimulated and held in productive movements has little to do with the conventional rhetorical or aesthetic devices. Rather, it consists entirely in one's being led to think the material through. (p. 355)

The point is, as Knoblauch and Brannon point out, that the inexperienced writer may take a whole semester to master the constraints of, say, a business letter, while the skilled writer can learn them in one or two hours. The first writer will have difficulties, not because the business letter is so difficult to manage, but because thinking and communicating in writing is difficult. So again, we must pay much closer attention to the deep structure of writing, the original meaning of writing, and how writing is actually accomplished in practice.

The authors point out that the problem with the classical *arrangement* theory of composition, which is very much alive today, is that it does not really tell us what is involved in writing composition. It speaks formulaically of large boxes containing different sorts of information just as composition textbooks speak of "introductory paragraphs," "conclusions," and so on. But is does not tell us anything about connection or entailment or how one idea precedes or anticipates another. It does not tell us anything about the struggle writers have with deciding what to write next, what to include and what to exclude, or what matters most to writers as they strive to organize their discourse. And finally, it does say anything about why people undertake this often difficult process, even if they don't need to. This mechanical model of composition has very little to say about the deep structure of writing because it does not recognize the problem of coherence and the problem of whole/part tension. It simply assumes that "simpler" elements of discourse -- the "parts" -- precede the larger patterns comprised of them, just as the parts of a watch precede their construction into a watch.

Only by becoming attentive to the *lived experience* of writing are we able to come to an understanding of the reality of writing, the "structure" of writing as it reveals itself in the actual process of writing. In *Revision: The Rhythm of Revision* (1984) Marian M. Mohr shows how children that were taught the "single paragraph" approach were totally unable to make any sort of sequence in their writing, except by occasional compositional word. For the same reason one would expect the so-called "building-block technique" to fail in most cases, at least where some sort of coherence is required. The point is that writers strive to organize their discourse, how to get started, what to say next, when and how to stop, how to combine arguments, and finally, how to create a sense of wholeness. Choices must be made about what to say and what to exclude. The inclusion of one thing constraints the inclusion of another. Some statements must come first, and some later, in the linearity of the written composition. But what "ought" to follow at any point in the evolving text depends primarily on the writer's awareness of what may be best suited both to accomplishing the purpose of the writing and to the inner logic of the already implicit structure. Coherence comes from the ability to make sensible connections, say appropriate things at appropriate times and to interrelate them in ways that achieves the writer's intentions. It is therefore a question of *judgement*, a judgement regarding what is appropriate to say, when, and how. It is a judgement about what fulfills the writer's intentions, what words express the meanings the writer wants to express and what the text needs as a whole.

Writing is reflective

Nothing shows more clearly the non-mechanical nature of composition in writing than the amount of reflection that generally goes into finding the right expression, deciding on how to proceed, crafting a particular sentence, or deliberating about what to include in the text. In speech, particularly in informal conversation, we plan at the point of utterance -- hence the hesitations, false starts, reformulations and so on that are part and parcel of the nature of speech and that deviate in frequency only when speech has become either highly formalized or highly intimate (Harris, 1986, pp. 88, 89). In this process, the responsibility for planning the discourse is shared by all participants and in a typical classroom situation this responsibility rests with the dominant partner -- the teacher (p. 89). By contrast, the writer is in sole control of the planning of the text. He or she has to generate both questions and answers. Sharon Pianko (1979), for instance, found out that the act of reflection during composing -- behaviorally manifested as pauses and rescannings -- is the single most significant aspect of the composing process (p. 277). It is reflection which stimulates the growth of consciousness in students about the numerous mental and linguistic strategies they command and about the many lexical, syntactical, organizational choices they make -- many of which occur simultaneously -- during the act of composing (p. 277).

So, the ability to reflect on what is being written seems to be the essence of the difference between able and not so able writers from their initial writing experience onward. A paragraph can easily take hours to construct. To express oneself in language, and to be able to communicate one's ideas well in written language is difficult. In their book, Knoblauch and Brannon (1984) give an example of the deliberative process that goes into the construction of a relatively "simple" paragraph. The paragraph goes like this:

> Jane, I imagine, is a wonderful friend. Being her brother, I don't qualify as a friend. We have a superficial friendship only to keep our parents' sanity. (To give an example, sitting at the dinner table, she will complain about the juicy thick steak that she is not eating. I will offer to take it off her hands for her. But rather than give it to her brother, she will march into the kitchen and throw it out). This doesn't last long though. As soon as the folks are asleep, she starts in. Monday night football will have a tied score. There is five minutes left and the Steelers are on the ten yard line and all of sudden, I am confronted with I Love Lucy. It is really too bad that she is so bright and talented and uses that as a weapon. (p. 8)

This paragraph was written by a first-year college student who was also asked to compose aloud into a tape recorder so that the teacher could gain insight into the choice-making process as it occurred. Knoblauch and Brannon present pages of such "internal dialogue" transcript but what follows is "just" what went into the composition of the first three sentences:

> Talking: Now, all right, let's see.
> Writing: Sister dearest, starring Jane.
> Talking: You understand, the names have been changed, to protest -so she doesn't know - all right
> Writing: Jane is, I
> Talking: imagine -i-m-a- you're going to have to correct the spelling,
> Writing: friend, n-d, that's right.Writing: But unfortunately
> Talking: no-I have an inescapable, marvelous invention-
> Writing: I, being her brother, am not her friend
> Talking: Let's see. [illegible] okay-out loud
> Writing: (Puts in a period) Not that we don't try to be friend
> Talking: (laughter) It's just that over the years we've learned how to be enemies. Hmm. When she came came back from school-she is taking a semester off from school I figured, you know, we're both mature

> people, we can be friend but, no. Oh, I'm not writing anymore. Gotta write, not talk. I can talk and write? Okay. But this doesn't make sense.
> Reading: Jane is, I imagine, a wonderful friend. But being her brother
> Talking: You know, that doesn't make any more sense either. Wait a minute -- could I just change that around? Let's see: Being her brother, I am not her friend.
> Reading: Being her brother
> Writing: though
> Reading: I am not her friend
> Talking: Let's see. I'll start all over again. Jesus, I've got to learn how to spell.
> Writing: Is a wonderful friend.
> Talking: n-d
> Writing: Being her brother, I don't qualify as a friend.
> Talking: period.
> Writing: We have a superficial
> Talking: i-c-i-a-l
> Writing: friendship
> Reading: a superficial friendship
> Writing: Only
> Reading: Only
> Writing: to keep my parents' sanity. (pp. 9-10)

Now, what is it that makes the writing process so dynamic? How do we understand all this "back and forth" movement in the composition of written texts? Part of the problem we have with understanding the writing process derives from the ancient perspective which presents the composition process as the presentation of arguments or arrangement of information. I believe that if we, by contrast, understand the writing process as a perpetual *search for meaning*, or the creation of meaning, we should be in a better position to understand some of the difficulties writers have to wrestle with in writing, including all this "back and forth" movement. For as Gadamer (1982b) says, understanding is the coming into being of meaning. A study of the experience of writers confirm this observation. "I write to make sense of things," many writers say. "Writing," Nadine Gordimer (1985) puts it, "is making sense of life. You work your whole life and perhaps you made sense of one small area (p. 255). And in the same vain Rebecca West (1985) writes: "I write books to find about things" (p. 27). In *The Timeless Moment* (1980) Lockerbie writes:

> I write because I must; I write because I find order to my life through expression and communication. But buried in that last remark is a key word: the verb find. I find order. It does not come laid out for me like a Simplicity

> dress pattern or a set of blueprints. Finding order through writing is an adventure in discovery. (p. 88)

But whether one chooses to say that the writer seeks to "discover" meaning, or "make" meaning, it remains that we have to understand the writing process as essentially a meaning making/seeking process. All writing contains the *thinking through* of some thought, the *formulation* of ideas or questions and, as we saw previously, this reflective moment requires often special conditions such as place and time. One of those conditions seems to be privacy.

Writing is a Solitary Activity

Ever since Seymour Papert published his *Mindstorms* (1980), computer advocates have sought to convince others that computers do not at all isolate the user, even that computers actually enhance social interaction. Most books on the use of computers in the curriculum reflect this attitude, usually containing pictures showing two or more children clustered around a computer terminal. Researchers in the field of computerized writing are no exception here. We are told that computers have a enormous potential for encouraging social interaction, mainly through such facilities as "computer mail," various types of "computer conferences," "electronic mail," "electronic bulletin boards," "collaborative writing," or "publishing." All these facilities are presented as instruments for facilitating social interaction in the writing process.

No one will probably deny that these facilities are able to add new dimensions to the communicative structures involved in writing instruction, although I doubt that many people would be willing to say that computer conferences or electronic mail will ever replace face to face interaction with fellow students or teachers. But what about the ontology of writing underlying this emphasis? In what sense is writing social in nature? What weight shall we give to the social aspects of writing? Let us look more closely at what is being said here. In *Writing and Computers* (1985) we find the following description of what the author calls "collaborative writing":

> Three children are clustered around the computer. First, Adam helps Alex learn to use the word-processing program as Michael looks on. All three boys then progress from discussing the word-processing operations to collaborating on a history assignment. Together, they develop a piece about the Civil War -- each boy adding details and arguing about whether the war did or did not help America. Sometimes, they respond to one another by changing the text, rather than by talking. The collective work emerges with no handwriting differences to identify individual writers. The children even change one another's sentences slightly, so that few sentences remain that were written by an individual author. The voice is not as unified as if it were written by one author, but all of the children have learned something about collecting details for a piece, using text for arguing, and anticipating a reader. (p. 27)

Such and similar anecdotes are meant to demonstrate the social atmosphere (co-operative learning and peer teaching) which the word processor may facilitate. But what do we make of this? Are we really speaking of writing in the case of two or three children in front of a single computer screen with every one of them trying to make their own contribution to the evolving "text"? What is the significance of this kind of writing?

In the previous section I emphasized the social nature of writing, that writing is a cultural concept which refers to standards and conventions belonging to a community of people. This presentation, however, does not refer to the *act* of writing. A study of the writing habits of authors reveals an obvious contradiction between the presentation of writing discussed above and authors' experience of writing. Most authors speak of the inescapable loneliness of the writer, the fact that writing remains a one man's craft. "I think of writing as private enterprise," says Joseph Heller (1981), and continues by explaining that "Nothing is more personal than one's thoughts; I think I'd prefer to keep it that way" (p. 240). And Evelyn Waugh (1986) writes, "I never can understand how two men can write a book together; to me that's like three people getting together to have a baby" (p. 111). In *The Timeless Moment* (1980) writer Bruce Lockerbie writes:

> The writer knows that he is a solitary creature; his art demands what Wordsworth called "the bliss of solitude." He is a writer, not a member of a committee. His mission is to write, not produce an abomination of group-

> think or any other collectivized propaganda. To perform this task well, the writer must work alone. He must accustom himself to his own companionship, to the inevitable loneliness of his vocation. (p. 83)

This doesn't mean, though, that all writers need to move out to the countryside to be able to write, even if it sometimes helps. Most authors find that interaction with people, just like reading, is necessary for being able to write. The actual practice of writing, according to many authors, requires a considerable amount of privacy. Some authors may be able to write in public places, in restaurants or public parks, others need a complete, noiseless privacy. Writer William Styron (1983) is one of them:

> I find it's difficult to write in complete isolation. I think it would be hard for me on a South Sea island or in the Maine woods. I like company and entertainment, people around. The actual process of writing, though, demands complete, noiseless privacy, without even music; a baby howling two blocks away will drive me nuts. (p. 271)

Authors differ of course from one another in how much privacy they need to be able to write. What remains, though, is the fact that we need to distinguish between writing as a socio-cultural notion and the actual act of writing. In the actual process of writing the author is largely anti-social. Not unlike reading, writing shuts the writer off from the world. The author Nadine Gordimer (1984) speaks here of this peculiar relationship between the writer and world:

> The solitude of writing is also quite frightening. It's quite close sometimes to madness, one just disappears for a day and loses touch. The ordinary action dry cleaner's or spraying some plants infected with greenfly is a very sane and good thing to do. It brings one back, so to speak. It also brings the world back. (p. 275)

What, then, becomes of such notions as "collaborative writing?" If the thinking through of the material in the writing process requires noiseless privacy and isolation of the writer what sort of writing takes place in a group of two to three in front of a computer terminal? What is the significance of the activity that takes place under those circumstances? Many researchers in the field of writing argue that since "conferences" and "publishing" have become a taken for granted aspect of writing instruction in American schools one can certainly predict that the printing and formats facilities of the word processor, by providing students with a nice formats and good looking printouts of their writing, will encourage students to share their writings with others. Both conferences and publishing are ways to make something public, to expose and share with others one's writing. If we do want to evaluate the social nature of writing we will have to consider the deep meaning of "collaborative" writing, the best sense that can be made of this word. If the word has some sense, it does refer to something more than a simple division of labor. And while it may be quite true, as pointed out earlier, that word processors do indeed increase the quantity of written material, we still have to consider the possibility that this newly gained power over "publishing" facilities will favor one sort of writing as against another sort. How much weight should be given to these strategies? What sort of experience do these strategies possibly overlook?

Attentive teachers and researchers have noticed how young writers do often develop a strong personal feelings towards their work, even to the point that they refuse to "let others see" their work. This feeling of "mine" associated with written works points to the limitation of the often unquestioned value of "publication" and "writing conferences." "Nothing is more personal than one's own thoughts" says novelist Joseph Heller (1981) in an interview (p. 241). Maturating as a writer means, among other things, getting used to this dis-covering of oneself as a writer, this public disposal. But usually only small amount of what is written is ever published. The bulk of it remains on the writer's desk or drawers. And some of it was never meant for public consumption. Writing, as perhaps thinking in general, is for many an internal "dialogue," a way to deal with one's own experiences. Sometimes something may come out of it that the writer wants to share with others, sometimes not. This is something teachers of writing must always respect. The use of word processors in writing instruction may result in an overly strong pressure on students to expose their writing to others.

How do we respond to the claims that computers, through such things as electronic mail, electronic bulletins and computer conferences and networks reinforce the social nature of writing? We need to consider the sense in which we can say that writing is indeed social in nature. Throughout my discussion I have emphasized one sense in which we can speak of the social nature of writing, the sense in which writing is always a search for others, by means of various literary conventions and standards. However, we need to keep in mind that writing is in another sense directly anti-social. The act of writing is, for many people, a highly personal activity requiring often a complete isolation from others. This raises critical questions about such things as "collaborative writing" and its value in writing instruction. The fact that more than one person can sit in front of a computer screen should not lead us to the conclusion that "collaborative" writing is something worthwhile and should be promoted in schools. This dual nature of writing must always be respected in writing instruction.

The "interactive" capabilities of the computer must not make us overlook this dual nature of writing. Writers, young and old, need quietness and peace of mind in order to write. Teachers of writing will gradually take advantage of many of the technical facilities of computers, especially the printing facilities but also other facilities such as the data-bases, computer networks, and electronic bulletins. It is important, though, that any development towards a more "interactive" and more "open" writing instruction takes place with due attention to the anti-social nature of writing. There will always be a tension in writing between the personal and the public, the need to write down what truly belongs to the individual and that which is addressed to others. The danger is that if young writers are forced too strongly in either direction, simply because the material situation of the school favors it, they will never develop an ability to combine these two aspects of writing in a harmonic whole. This tension between the private and the public in writing, however, goes far beyond the problems of the classroom. New technical facilities in communication technologies evoke questions about the meaning of literacy in contemporary "Information society." As Heim (1987) points out, anyone writing on a fully equipped computer is, in a sense, directly linked with the totality of symbolic expression -- more so and more essentially so than in any previous writing element (p. 215). By means of huge databases, networks and videodiscs, texts can be accessed instantly, copied and manipulated as information. Already there exists computer linkage through electronic mail systems and computer conferences are held which move the flow of scientific knowledge with less lag time than traditional printed journals. All this helps to create new communicative possibilities we are just beginning to consider.

Extended communality

An essential component of most communication models is the notion of a "message" or "communication." Generally, message refers to what is said or written about something and which is conveyed to an addressee. Hence, writing is said to be "about" something and this something is usually something about which the writer needs to become knowledgeable. The most common source for gaining acquaintance with foreign subjects is books. Writing topics in the early grades may, of course, consists in a narrative based on a personal experience, without any reference to what others have written about similar experiences, but it is clear that any advanced writing must take account of what others have said about the particular topic at hand. As Derrida points out, writing is largely about other books. This view is also well documented in the writings of Walter Ong (1982b). Ong writes:

> Texts exist in relation to other texts much more than in relation to spoken language. This relationship is often labeled *intertextuality*, a terms which is obviously related to the intersubjectivity dear to phenomenologists and which thereby reveals some of the phenomenological sources and alliances of textualist study. (p. 176)

Traditionally, school libraries have reflected the recognition of this fact. And in the curriculum, particularly in later grades, this *communion* of writers is reflected in the so-called "Research Papers" students are continually asked to write. Reading, as a way to get knowledgeable in some area, is in most cases a condition for the possibility of writing. Now, in the age of computers, new development is beginning to take place, particularly with the development of networks and huge textual databases which allow for an instant retrieval of various kinds of information from all over the world.

The possibility of faster access to information through networks, databases or videodiscs may not turn out to be as pedagogically significant as some people would like to believe. The final question is not about *quantity* of material accessible through the computer network or the database but about the *quality* of the writer's response to the material gained. Probably the most misunderstood rhetoric device in writing instruction in modern secondary and post-secondary schools is found in the so-called "Review of the Literature" parts of students' research papers and theses. Insofar as students are led to believe that this part of their research is meant to show their "acquaintance" with "related" literature this aspect of their research is grossly underestimated. Reading does have other functions than simply to get acquainted with what others have said about a given topic. Reading is necessary for the author to find a *place* or *situate* him or herself somewhere in relation to a given topic. To participate in a larger community of writers means, not only to read their material, but to establish a *conversational relationship* with the wider community of readers and writers. In the "research paper" the student attempts to make a place for him or herself by *conversing* with others in the field, drawing attention to forgotten questions, new ways of dealing with old questions, and so on. In other words, reading means the rewriting of the material in the writer's one own way, his or her own language. Georges Gusdorf (1965) attempts to describe this uniqueness of each writer:

> The writer is a man who speaks in the sense that he must establish himself by the use he makes of speaking, the impersonality of the established tongue giving way to the power of suggestion of personal being. But the language of the poet in his mastery is not a regression to infantile egocentrism, where communication gives way completely to expression (p. 73)

So, for the same reason that students must be given time to "dwell" on the topics, students must be given time to read (and think the material through). It is not enough to have access to large databases. The idea of using computer databases in the writing process is worth the attention. Well organized databases can be of great convenience in the writing process, especially when the writer needs a reference, a quotation, or information about a specific topic. Problems arise, however, when we want more from this technology than it is able to provide. To be sure, most types of writing are based on various sorts of information -- references, ideas, numbers, names, and so on. But no collection of such information constitutes "writing" in any fundamental sense of the word. To become "writing" such information and ideas must, as we have seen, form some sort of whole, a unity, that allows us to speak of a "text," a unity created by some purpose, question, or other underlying structure. This raises a number of critical questions about the meaning of so-called "information society" currently emphasized in educational theorizing. Maxine Greene is one of those who has serious doubts about the value of this emphasis. In "Literacy for What?" (1982) Greene writes:

> Students experience inertness when they are confronted with information that is solidified, packaged, and in some way dead: pieces of what is incorrectly called knowledge, something students are expected to insert into their minds. Such a barren approach to teaching or to communication can only discourage thinking and mindfulness. (I anticipate with some horror the advent of videodiscs and additional cable networks if we cannot countervail against this.)... All of us can recall people (not only children) who say, "I know, I know," meaning that they do not want to think about something. All of us are familiar with the kind of certainty that makes people feel there is no more need to think, and we are familiar with the numbing effect of packaged media messages and categorized "information." (p. 83)

A countless number of cases also testify to the difficulties students get into when they believe that information is something hard, fixed, and permanent, that is lies "out there" somewhere, and needs to be gathered up completely before writing can occur. They then amass boxes of "data," often hundreds of pages, only to find out that they are unable to cope with what they have so meticulously gathered because they have failed to understand the rhetorical nature of all subjects and topics. In brief, information by itself does not create the condition for the possibility of writing in the traditional sense. As I suggested before, for most people writing is a hard labor; it forces the writer to sit down and work his or her way through the material, to think the material through, to sharpen the purpose, the tone and the coherence in the text.

These publishing possibilities, together with universal networks and huge databases, move the notion of publishing, of making public, onto a totally new level. As Michael Heim (1987) shows, digital writing turns the private solitude of reflective reading and writing into a public network, where the personal symbolic framework needed for original authorship is threatened by linkage with the total textuality of human expression. Anyone writing on a fully equipped computer is, in a sense, directly linked with the totality of symbolic expressions -- more so and more essentially so than in any previous writing element (p. 215). With these new technologies the notion of collective intelligence and the potentially dangerous possibilities of controlling such a public voice has become a real threat. Perhaps the true meaning of the so-called "Information society" is exactly that everyone becomes aware of what everyone else is saying -- instantly and without delay, whatever the quality is. On the other hand, I have tried to show that a certain amount of solitude is requisite for creative thought. As suggested before, any reference whatsoever to inner psychic life runs counter to the pragmatic automation of writing and to the interpretation of language as information code to be manipulated. The "electronic pen," as Heims says, fosters an experience of the world that is increasingly monitored, linked, and driven into productive stress.

The Message of the Electronic Word

All this -- the control of the text, the speed of screen writing, the possibility of collaborative writing and the access to huge textual databases -- is likely to affect writing composition in the course of time, even if the first impression of greater control makes it seem as though the writer is in complete control rather than being affected by the psychic framework of the computer. I have already pointed out how the word processor, by making writing more like speech, has a tendency to bypass a certain step in composition, the contemplative or reflective mode of expression that results from the physical barriers of handwriting and even typing. This is also likely to lead to an inflation of text through word processing technologies. The number of reports and all kinds of documents is likely to increase rapidly, even if fragmentation and incoherence is the price we frequently have to pay for this increase in "output." The speed of writing and the ease of publishing help to create a situation in which more and more information is put out into the world with less and less delay. Everyone can create and publish what they want, without the intervention of editors and without the integral vision which traditional bookwriting favors.

Software designers and writing researcher have not been particularly attentive to the possibility that computer technology may, in the long run, change the way we write, even gradually change our conception of knowledge. Is it possible that the increase in control over the text that computers provide will lead to analytically more rigorous writing? To more expressive writing? Or to something else we haven't even thought of yet? The degree to which the word processing capabilities of the computer, for example, increases commitment of the word to space, giving the writer previously unknown control over the text *as an object*, makes it possible to anticipate not only changes but transformations in the way we write. And since writing on computer screens is gradually replacing older forms of typographic composition, so that most writing will soon be done in one way or another with the aid of electronic equipments, one wonders what this change will mean for the way we write. Working on the computer the writer is now able to insert new words and sentences anywhere into the text, delete words, sentences, or even whole sections of the text, or move blocks of text from one location to another, and incorporating information from different sources, large databases for instance, into the text. As I write directly on the screen my stream of consciousness can be paralleled by the running flow of electric letters. Word, sentences and paragraphs slide smoothly into place, making way for one another or disappear and reappear in a new location. The question that concerns us here is what implications this may have for the development of writing. What kind of writing, and what sort of psychic framework, does this technology favor? What are the possible ways in which word processors can affect writing and the thinking that goes along with it?

It has been noticed that by isolating thought (the word) on a written surface, detached from any concrete existential setting, writing encourages what Ong (1982) calls "noetic closure;" a sense that what is found in writing is somehow self-contained. Print, on the other hand, creates a sense of closure much more strongly than handwriting, giving the impression that what is in the printed text has been finalized, has reached a state of completion, and which explains the false impressions of completion computer printouts can give inexperienced writers. A printed text, a book for instance, is supposed to represent the word of an author in a definitive or final form. As Ong (1982) writes, "print is comfortable only with finality" (p. 132). Manuscripts, by contrast, with their glosses or marginal comments, which often get worked into the text later, are more in a "dialogue" with the world outside their own borders, inviting changes to be made. Readers of manuscripts are also less closed off from the author, less absent than are the readers of those writing in print.

This sense of closure reinforced by print, and probably even more so by the computer, affects written material in many, often unforeseen ways. Ong (1982) suggest that with the invention of printing the catechism and the textbook became less discursive and less disputatious than most previous presentations of a given academic subject. Catechisms and textbooks presented "facts" or their equivalents: memorizable, flat statements that told straight-forwardly and inclusively how matters stood in a given field (p. 134). In other words, a typical textbook is designed so as to give the impressions that it covers the whole field and proceeds by cold-blooded definitions and divisions leading to still further definitions and divisions, presenting every topic as complete and self-contained. The extensive use of lists, and particularly of charts, so commonplace in our high-technology cultures, is a result not simply of writing, as Ong (1982) points out, but of the deep interiorization of print, which implements the use of fixed diagrammatic word-charts and often informational uses of neutral space far beyond anything feasible in any writing culture. The value of lists and charts is essentially based on the efficient reduction of sound to space, setting up clearly defined spatial sequences. Items are marked *a, b, c,* and so on, indicating their sequences, defining exact spatial location for special information.

The control and manipulability of word processing, together with the exact spatial organization, clearly favors information-rich writing simply for the reason that only information-rich text lends itself to such an exact dissemination. It seems, then, as if the type of writing that benefits mostly from this increase in control over the text is an information-based writing, such as we find in business (account-keeping), and various types of official documental writings and information processing. That computers are appropriate for the creation of lists and charts and manipulation of such items needs no lengthy explanation. The capability of retrieving information from different sources, the use of databases, the capacity to move "blocks" of text (items) from one location to another, all seem to be designed for efficient manipulation of this kind of knowledge. To say this, however, is to suggest that computers *favor* the manipulation of information-based and information-rich text that can easily be broken down and kept as self-contained items. InFORMation, as Heim (1987) points out, is a very specific type of FORMulation. To formulate means, traditionally, to "give shape to attention, to show the outlines or form of what we see intellectually, to put things in their limits, to delineate them" (p. 158). Information assumes that the fomulation of something is neutral or has already been accomplished. Information precludes the struggle for formulation (p. 158).

Conclusion

Much of what has been written about the role of word processors in the composition process presupposes an ancient theory of composition. It assumes, as the ancient Greek and Roman rhetoric did, that composition is largely a mechanical task. By taking the notion of composition too literally, particularly the "putting together" meaning of composition, this rhetoric overlooks the struggle for coherence in the writing process: the struggle writers have with deciding what to write next, what to include and what to exclude, or what matters most to writers as they strive to organize their discourse. On the other hand, it was suggested that word processors may contribute to composition in many ways. It is possible, for instance, that word processors reduce the fear of the "empty page" by allowing the writer to write out several versions of the text, without inducing the feeling that everything needs to be written up again in the end. However, this does not eliminate the problems involved in composition but it may make writers more willing to undertake this difficult process. The point is, as Michael Heim points out in *Electric Language: A Philosophical Study of Word Processing* (1987), that the automation of the inscription process is experienced as bliss because it brings the domain of symbolization into step with the productivity of technological enframing. However, the relative bliss of automated formatting and printing can hide the qualitatively different ways that text is experienced.

It should be obvious that writing is not a skill in any technical sense of the word. Probably it is all the more precise to speak of competence rather than skills in this context, primarily because of the technical connotations that go along with the notion of skills. The difference is first and foremost that competence, unlike most skills, can not be taught, learned and forgotten. Competence can only be *nurtured* or *fostered*. And more than anything else, writing needs to be practiced. To intend to teach writing by teaching the "correct" skills or strategies is like teaching swimming without ever getting into the water. Even if good guidance is of greatest importance in developing the competence of writing, the practice of writing will always be a ***necessary condition*** for developing such competence.

It remains, though, that the word-processors may, in the course of time, affect composition and our conception of the meaning of writing and knowledge. It was argued that the strength of computers lies in information processing and as such they favor an information-based writing, writing of texts that can be easily broken down into segments or largely independent parts. One consequence of this could be analytically more rigorous writing but synthetically weaker. The real concern, though, has to do with the possibility that, because word processors are good for information-processing, we will begin to identify "writing" with "information processing." But as we saw, no collection of information constitutes, yet, a "writing" in the traditional sense of the word.

F. Writing is Revising

> An obvious advantage of word processing is that the electronic recopying capacity helps many writers compose more freely because making changes no longer require time-consuming recopying or retyping.
>
> (Daiute, 1985, p. 36)

Of all the things that have been written about computers in the writing process no single topic has been so much discussed as the potential value of the computer in the revision process. For many people, *the* main value of the computer for writing is to be found in the capability of the word processor to make the revising process easier and, consequently, more joyful. It is pointed out that revising in the "old" way is a time-consuming and often tedious process, and each time the writer, a student for instance, wants to improve a text, the writer has to pay the price of incorporating the change into the text which generally means rewriting, recopying or a messy page. The word processor, on the other hand, with its "delete," "insert," and "move" commands, allows the writer to prune, expand, and rearrange the text without having to recopy or using the "messy" procedures of the traditional way of writing, with scribblings in the margins, arrows here and there, large omit signs surrounding paragraphs, and so on. So, instead of manual "cutting" and "pasting," or a rewriting of the whole text, the computer writer is now able to insert new words, sentences or sections, delete parts of the text, or move blocks of text from one location to another, without ever having to rewrite the text as a whole. For Spider Robinson (1986) this definitely adds to the joy of writing:

> I can finish my entire novel, decide that the hero's name shouldn't be Joe Smith, it should be Alexander Hergenscheimer, which is a lot more text -- you can't even use white-out and type it in there. But I just instruct my robot to go fix that, and he will scan through the entire manuscript, everywhere "Joe Smith" appears, replace it with "Alexander Hergenscheimer," everywhere "Joe" appears, replace it with "Alex," and so on, and retype the whole damn 300 pages to compensate in about the time it takes me to light a cigarette. So I'm in hog heaven, you know. The things that are endless drudgery in writing, the endless retyping, and arrows going to here and there and cross-outs and white-outs, all disappear. Every time I sit down to work, I look at clean copy, and that's just such a psychologically wonderful feeling. On top of that, research becomes much easier, facts are at my fingertips. (p. 21)

In a similar vain author William Zinsser (1983) writes:

> What makes the system so enjoyable is that anything you type at the location of the cursor will displace what is already there. It won't lose the existing sentences; it will just push them to the right. This means that wherever you place the cursor you can insert a new word, a new phrase, a new sentence, or any number of new paragraphs. (p. 69)

In other words, part of the joy of using the word processor, it seems, is to get rid of all the "messy procedures," particularly all the paperwork, that usually goes along with ordinary writing. On the computer screen everything is clean and neat, no manual pasting anymore, no arrows going from here to there, no large omit signs surrounding the paragraphs, and so on. On the word processor, everything gets worked into the text at once and no traces of previous mistakes remain. In *Writing and Computers* (1985) Colette Daiute gives an example of a computer-assisted revision where the word processor, with the help of the "replace" command, was used to change each occurrence of the word "Rick" to "Timmy. "

Original Text

> Cousin Rick's wedding was, like all weddings, unusual. People who hadn't talked to one another in years were hugging. The brother who had blown his toe off in a fireworks accident looked like an angel with his hands folded in prayer. The best man mentioned the deep love of the newlyweds, Rick and Mary, who had met just two months before this day. Everyone felt warm and close. Rick's sister Sara took family portraits of close and distant relatives in all combinations. The event closed with a song by Mathew, and everyone danced. It would be nice if life were unusual.

Revised Text with Replacement

> Cousin Timmy's wedding was, like all weddings, unusual. People who hadn't talked to one another in years were hugging. The brother who had blown his toe off in a fireworks accident looked like an angel with his hands folded in prayer. The best man mentioned the deep love of the newlyweds, Timmy and Mary, who had met just two months before this day. Everyone felt warm and close. Timmy's sister Sara took family portraits of close and distant relatives in all combinations. The event closed with a song by Mathew, and everyone danced. It would be nice if life were unusual. (p. 122)

In addition to those standard features of the computer we are also facing a rapid growth in non-standard text-analyses programs, spelling checkers, on-line dictionaries and thesauruses, and prompting programs, all of which are expected to make the revision process more effective and precise. Text-analysis programs, for instance, browse through the text for the purpose of providing quantitative information about such features as word frequencies and sentence length. What follows is an example of a text-analysis output from a *Writer's Workbench* programs called STYLE and ABSTRACT.

STYLE

```
        readability grades:
        Kincaid) 11. 4 (auto) 10. 3 (Coleman-
        Liau) 8. 1.(Flesch) 11. 1 (54. 4)

sentence info:
        np  no.  sent 13 no.  wds 301
        av sent leng 23. 2 av word leng 4. 29
        no.  questions 1 no. imperatives 0
        no.  content wds 158 52. 5% av leng 5. 31
        short sent ( 18) 38% (5) long sent np  ( 33) 23% (3)
        longest sent 47 wds at sent 11;
        shortest sent 8 wds at sent 4 nl 2

sentence types:
```

simple 31% (4) complex 23% (3)
compound 15% (2) compound-complex
31% (4)

word usage:
verb types as % of total verbs
to be 52% (24) aux 17% (8) inf 33% (15)
passive as % of non-inf verbs 13% (4)
types as % of total
prep 7. 6% (23) conj 4. 7% (14) adv 6. 0%
(18)
noun 21. 9% (66) adj 13. 3% (40) pron
6. 3% (19)
nominalizations 1% (3)

sentence beginnings:
subject open: noun (2) pron (0)
pos (0) adj (6) art (0) tot 62%
prep 0% (0) adv 8% (1)
verb 8% (1) sub-conj 15% (2) conj
0% (0) np expletives 8% (1)

ABSTRACT

In this text, 2. 8 percent of the words are abstract. Psychological research shows that concrete texts are easier to read, easier to use, and easier to remember. Generally, the lower the abstract index, the better. Your percentage of abstract words given above, however, is higher than the usual limit, 2%. Have you illustrated each of your points with fully developed examples and specific details? If not, do so before handing your paper in. (pp. 74, 75)

Finally, programs are available that present, when the writer wishes, prompts that suggest strategies writers can use to guide their "internal dialogues" about their writing, not unlike what was described in the section about the problem of "finding a topic." Such prompting programs do not offer as much quantitative information as text-analyses programs do. Instead, they present questions that are designed to guide writers in making qualitative judgements for improving their texts. With this in mind, Colette Daiute designed a computer program called "CATCH" that offers writers prompting along with analyses to guide their revising. The idea is that at any time during, or after, composing a text, the writer can give a command to see the list of CATCH features. The program then presents comments, questions, and a few pattern analyses related to the completeness, clarity, organization, sentence structure and punctuation of the text in which the writer is working. Some of the features of the CATCH program presents question prompts, such as:

> DOES THIS PARAGRAPH INCLUDE DETAILS THAT HELP THE READER SEE, HEAR, FEEL, OR SMELL WHAT YOU'RE TALKING ABOUT? (p. 127)

Other features identify words and phrases that might include problems. For example, if the writer selects the "EMPTY WORD" option, the program identifies unnecessary words, such as "sort of" and "well. " As these words are highlighted on the computer screen, a prompt appears at the bottom of the screen:

> THE HIGHLIGHTED WORDS MAY NOT BE NECESSARY. DO YOU NEED TO MAKE CHANGES? (p. 127)

Such prompts are intended to stimulate the writer to focus on the organizational, semantic, and logical features of the text that computer programs cannot deal with. The writer can then make changes immediately if he or she wishes. And by using the CATCH program, the author maintains, the writer is "in control of all evaluations and changes (p. 127).

The Meaning and Significance of Revision

It is clear that any evaluation of facilities like those that have been described here must be grounded in an understanding of the meaning and significance of revision. What is the meaning of revision in writing? Is revision primarily a revision of complete drafts as previous examples suggest? Is revision really the "final" stage of the composition process? What is the relationship between this view of the revision process and the model of writing presented in earlier sections? What is the relationship between revising and rewriting? And finally, what is the relationship between quantitative analysis of a text and the possibility of revising?

The research related to computer-assisted revision reveals a common perspective on the nature of revising. This is the idea that revision is essentially the final "stage" in the composition process, following the "prewriting" and the "drafting" or "composition" stage. However, a study of the work habits of experienced writers suggest that the linear model of revision presented above is just as divorced from the actual process of revising as the mechanical model is from real composition. Most professional writers spend much of their time revising -- reworking and rewriting -- their texts over and over again. Hemingway (1983), for instance, claims that he wrote the last pages of *Farewell to Arms* thirty-nine times before he was satisfied (p. 222). Other professional writers make similar claims about their own writing practices, saying that often they write their material "over and over," thereby writing hundreds of pages for every ten pages that actually show up in their publications. Asked whether he does any rewriting, Frank O'Connor (1983) replied, " Endlessly, endlessly, endlessly. And keep on rewriting, and after it's published, and then after it's published in book form, I usually rewrite it again" (p. 168). Bernard Malamud (1985) claims that "revision is one of the true pleasures of writing:"

> First drafts are for learning what your novel or story is about. Revision is working with that knowledge to enlarge and enhance an idea, to re-form it ... The first draft of a book is the most uncertain -- where you need guts, the ability to accept the imperfect until it is better. (p. 157)

If writing is a perpetual search for meaning, for deeper understanding of what one is saying, perhaps demanding the writing of several drafts, where does the revision process begin? After the first draft? Or the second draft? Many professional writers express the view that every section of a text calls for a revision, a "re-viewing" of the whole text as well as of the initial plan. Revision means looking at what is actually coming out in writing in relation to what is already there and what is forthcoming. It seems as if we are back to the already familiar theme: "How do I know what I think until I see what I write." William Gass (1981) says that he works not by writing but by rewriting. In other words, revising or rewriting is not virtuous. It is not something that the writer "ought" to do. It is simply that most writers find they have to do to discover what they have to say and how. It is simply a condition for their craft. So, we can legitimately say that writing *is* rewriting and revising. We are here reminded of Donald Murray's (1968) view that:

> All effective writers know writing is rewriting. For the inexperienced writer a revision is a failure. The amateur believes that the writer is the person who can sit down and rip off an essay or a report. The professional writer knows better. Rewriting is what you do when you are a writer, for it is an essential part of the process of writing. It is the way you fit ideas into language. (p. 11).

What, then, is the difference between revision based on the linear and mechanical model of writing and revision as conceived by experienced writers? What do students need for the revision of their written works?

Revising for meaning

Nancy Sommers (1980) conducted a study that examined the revision processes of student writers and experienced writers to see what role revision played in their writings. What Sommers found was a radical difference between the revision procedures of these two groups of writers. The student writers understood the revision process primarily as a rewording activity with lexical changes as the major revision activities. The aim of revision, according to the students' own descriptions, is to "clean up speech." In writing, the redundancy of speech is unnecessary. For that reason, the students placed a symbolic importance of their selection and rejection of words as the determiners of success or failure of their writing. When revising, they therefore asked themselves: can I find a better word or phrase? The following are samples of their definitions of revision:

> I say scratch out and do over, and that means what it says. Scratching out and cutting out. I read what I have written and I cross out a word and put another word in; a more decent word or a better word. Then if there is somewhere to use a sentence that I have crossed out, I will put it there.

> I just review every word and make sure that everything is worded right. I see if I am rambling; I see if I can put a better word in or leave one out. Usually when I read what I have written, I say to myself, "that word is so bland or so trite," and then I go and get my thesaurus.
>
> Redoing means cleaning up the paper and crossing out. It is looking at something and saying, no that has to go, or no, that is not right.
>
> I throw things out and say they are not good. I like to write like Fitzgerald did by inspiration, and if I feel inspired then I don't need to slash and throw much out. (p. 381)

The experienced writers, on the other hand, described their primary objective when revising as finding the form or shape of their argument. Although the metaphors vary, the experienced writers often used structural expressions such as "finding a framework," "a pattern," or "a design," for their arguments. Here are some examples:

> It is a matter of looking at the kernel of what I have written, the content, and then thinking about it, responding to it, making decisions, and actually restructuring it.
>
> I rewrite as I write. It is hard to tell what is a first draft because it is not determined by time. In one draft, I might cross out three pages, write two, cross out a fourth, rewrite it, and call it a draft. I am constantly writing and rewriting. I can only conceptualize so much in my first draft -- only so much information can be held in my head at one time; my rewriting efforts are a reflection of how much information I can encompass at one time. There are levels and agenda which I have to attend to in each draft.
>
> It means taking apart what I have written and putting it back together again. I ask major theoretical questions of my ideas, respond to those questions, and think of proportion and structure, and try to find a controlling metaphor. I find out which ideas can be development and which should be dropped. I am constantly chiseling and changing as I revise.
>
> I have learned from experience that I need to keep writing a first draft until I figure out what I want to say. Then in a second draft, I begin to see the structure of an argument and how all the various sub-arguments which are buried beneath the surface of all those sentences are related. (pp. 383, 384)

In addition to the changes made on the word and sentence level, the experienced writers, according to Sommers, adopted a "holistic" perspective. They ask: What does my essay as a whole need for form, balance, rhythm, or communication. Details are added, dropped, substituted, or reworded according to their sense of what the essay needs for emphasis and proportion. This sense, however, is constantly in flux as ideas are developed and modified; it is constantly "re-viewed" in relation to the parts. As ideas change, revision becomes an attempt to make the writing consonant with that changing vision. These revision procedures, Sommers remarks, are a process of more than communicating; they are part of the process of *discovering meaning altogether* (p. 385). So, whereas student writers constantly struggle to bring their essay into congruence with a predefined meaning, the experienced writers do the opposite: they seek to discover engagement with their writing, in revision. They seek to emphasize and exploit the lack of clarity, the differences of meaning, the dissonance, that writing as opposed to speech allows in the possibility of revision. This complicated relationship between the parts and the whole in the work of experienced writers destroys the linear model: writing cannot develop like a line because each addition or deletion is a reordering of the whole (p. 385).

For this reason one has to be skeptical about such claims that the primary value of word processors is that they will be able to reduce significantly, or even eliminate, the rewriting of texts. Rewriting is much more than simply the correction of previous "errors," and profound revision is generally accompanied by extensive rewriting. As suggested earlier, writing and "thinking the material through," goes hand in hand. To rewrite, then, often means thinking the material through once again. This is why many writers have serious doubts about the alleged efficiency of the word processor. According to Lomberg (1986), for instance, the fancy editing facilities of the word processor are not necessarily better than the manual procedures associated with ordinary pen or pencil writing. For instance, editing procedures that leave no "traces" of previous efforts are actually less efficient than the "old" ones. Lomberg writes:

> Also, I found that sometimes I'd write a sentence, scratch it out and revise it, and then decide the next morning that the first version was better after all. Because the old version was still on the page with a line drawn through it, it's easier to compare the old version with the revised one. But when you change something in the computer, it's gone forever. For me, the old method of crossing out preserved a record of the process of writing more faithfully and more accessibly than the ephemeral glowing letters on the screen. Now, I'm the first to admit that my experience is personal and idiosyncratic. (pp. 20, 21)

And for many writers the possibility of not having to rewrite is devastating. Many writers claim that writing *is* to a large extent rewriting. Frederic Pohl (1986) writes:

> I write my rough drafts on the backs of old Xerox copies or whatever, just so I have to rewrite them. This is something I disciplined myself to do years ago when I discovered I'd been writing first drafts and selling them for several years, but they weren't any good. I made myself rewrite by doing that, and there are some sections that I have rewritten many times, and even apart from writing and rewriting, I do an awful lot of editing. (p. 23)

Not all agree, however, that the word processor necessarily gets rid of all the "messy procedures" so often associated with pen-writing? Most users of word processors admit that they make awful lot of printouts or hard copies while in the process of writing. Lomberg (1986) writes:

> For me, the labour saving possibilities of the machine just ended up wasting my time, and eventually I returned to an old-fashioned electric typewriter. Word processors were supposed to save up paper and let more trees live to a ripe old age. I found that using the machine produced so many printouts of various drafts that I ended up drowning in paper, not to mention the problem of keeping the drafts straight. (p. 20)

This experience seems to be directly related to difference between writing on a sheet of paper and writing on the computer's screen. When asked about this difference, many writers respond by speaking about a "loss of continuity" when writing on a word processor. I have already suggested why this happens. Now we shall consider briefly the notion of revision strategies and the value of quantitative analysis of texts.

Style is you

Most computer programs which are designed to help the writer in the revision process assume that revision is the final "stage" in the composition process and consists in looking over a finished draft for correction and surface changes. Furthermore, it shares with most North American textbooks on writing instruction the assumption that to any such "stage" there is a corresponding skill. Hence, we find lengthy discussions about "editing skills," "prewriting skills," "composing skills," "revising skills," even "paragraph skill," and how each of these skills can be developed. The problem with this theory, however, as Knoblauch and Brannon (1984) point out, is that such skills are as arbitrary as our ways of categorizing the writing process:

> The trouble is, the whole enterprise of skill designation is built upon illusion. Potentially, hundreds of skills could be distinguished, depending on how many grammatical, rhetorical, and logical perspective one might wish to investigate, or on how thorough an analysis one wished to make. Is "using nouns" a skill (or a subskill)? Is putting adjectives next to nouns a skill? Why should subject-verb agreement be a skill but not "putting adverbs in the right place" or "choosing the correct preposition?" In practice, as if by magic, the number of skills an instructor identifies tend more or less to equal the number of available class hours in a term. (p. 94)

Knoblauch and Brannon show, for instance, how many teachers offer practice in what they regard as the rules or forms of "paragraph construction," confident that what textbooks are telling them is truth about writing. According to this "rule," each paragraph is supposed to contain a single idea, and like the essay as a whole, it must have a beginning (usually one sentence), a middle, and an end (also usually one sentence). A "paragraph skill" would then consist in being able to apply this rule in practice. The fact of this matter, however, as even limited observation can reveal, is that this simply is not so. One cannot say that most paragraphs contain a single idea. The problem is not so much that writers fail to respect this rule but rather that it is impossible to do so. It is simply impossible to say whether a given paragraph contains a single idea or not. What about the next paragraph, does it contain a totally new idea? Perhaps there is a "larger idea" encompassing both of them? But what is a "large" idea and what is a "small" idea? What is an "idea" anyway?

We find, therefore, many professional writer say that style cannot be taught, only discovered through writing. "I suppose style is the mirror of an artist's sensibility," Truman Capote (1983) says, "more so than the *content* of his work," adding, "After all, your style is you" (pp. 295, 296). The teacher, Styron (1983) says, "can teach you something in matters of technique. You know -- don't tell a story from two points of view and that sort of things. But I don't think even the most conscientious . . . teacher can teach anything about style. Style comes only after long, hard practice and writing" (pp. 270, 271). And Katherine Ann Porter (1983) says:

> I simply don't believe in style. The style is you. Oh, you can cultivate a style, I suppose, if you like. But I should say it remains a cultivated a style. It remains artificial and imposed, and I don't think it deceives anyone. A cultivated style would be like a mask. Everybody knows it's a mask, and sooner or later you must show yourself -- or at least, you show yourself as someone who could not afford to show himself, and so created something to hide behind. Style is the man. (p. 156)

The presence of text-analysis programs makes one also wonder to what extent abstract "responses," such as quantitative information about grammatical and lexical features of the text, can help the writer in the composition process. This is particularly true where such programs are meant to teach "style." But can something like style be taught? Reducing style to structural features is to lose sight of the personal and situated character of what we call style. Almost all stylistic features -- choice of words, punctuation, sentence structure, etc. -- depend on the context for their appropriety. The "mere abstract or grammatical rightness of a sentence," A. McIntosh (1979) writes, "does not necessarily make it even grammatically appropriate in a particular setting or context" (p. 244). In other words, a grammatically correct sentence is not necessarily grammatically "good" in a particular context. It depends both on the subject matter itself and the author's intentions whether words like some, "few" and "well," are appropriate or not. It is therefore difficult to accept such maxims as "the lower the abstract index, the better," or "avoid vague expressions," as something that is going to help the writer to develop a style. In contrast, such maxims are likely to do the opposite, to destroy anything like a style. Perhaps Cohen and Lanham (1984), authors of one of these programs, get at the core of the matter with the following remark:

> Statistics have an illusory authority and one that students should not trust blindly: the Gettysburg Address and a bureaucrat's job description might produce very similar statistics, but that hardly means the two pieces share any other qualities. (p. 89)

The problem with all quantitative analysis of texts is that no one has clearly established criteria for judging the value of the findings. When are "complex" sentences more appropriate than "simple" sentences? Are short sentences always preferable to long sentences? It is clear, therefore, that such frequency-count approach is, in fact, not of great practical value in day-to-day writing instruction.

Many computer programs, then, which are designed to help the writer in the "revision stage," are generally based on a very superficial conception of revision. They assumes that revision is the "final stage" of the composition process and involves looking over a finished draft for correction and local changes. The first thing to realize, then, is that revision is not just an "afterthought," or an activity that "cleans up" language or "corrects" minor semantic errors. This merely confuses revision with mere editing or polishing of the text. Rather, it should be looked at as an intrinsic and valuable part of the writing process, an opportunity only given to writing. For, as Roland Barthes (1982) points out, the spoken word cannot be revised; it is irreversible. Here, according to Barthes, lies the essential difference between speaking and writing:

> A word cannot be retracted, except precisely by saying that one retracts it. To cross out here is to add: if I want to erase what I have just said, I cannot do it without showing the eraser itself (I must say: " *or rather . . .* " *"I expressed myself badly . . .* " ; paradoxically, it is ephemeral speech which is indelible, not monumental, writing. All that one can do in the case of a spoken utterance is to tack on another utterance. (p. 379)

In other words, revision is an advantage given only to writing, allowing the writer to think a particular expression over until he is fully satisfied with it or to say things only to find out that it does not express his intentions. Therefore, response to student writer's text must become process oriented, not product oriented. And revision must not be taught as a punishment, the price you pay if you don't get it "right" at the first time. The teacher who merely devices a check-list of items such as, "Is the introduction interesting?" "Does every paragraph have a single idea? has altogether failed to come to terms with the significance of the experience of revision.

The notion of "revision strategies," as presented in many textbooks on writing, is a superficial concept for it does not draw attention to the real challenge of writing and revision. Students do not primarily need revision strategies; they need to learn to become *attentive* to what they write, they need to develop an attitude that allows them to look at their texts both *critically* and *carefully*. They need to learn to *listen* carefully to the tone and the message of their text. They need to foster the ability to approach their texts as an attempt to answer particular *questions*. And they need to develop a sense for what is a good question and what constitutes an adequate *answer*. Good writers revise, not because they have learned the correct strategies, but because experience has enabled them to notice the dissonances in their writing which make changes necessary.

Conclusion

Does the computer make the revision process so much easier than before? Does the word processor free the writer from the "burden" of rewriting? I have suggested that the conception of revision that underlies much of what has been said about the value of word processors in the revision process is basically mistaken. At times it seems as if these authors fail to distinguish adequately between "editing" a text and "revising" a text, the former referring to the polishing of the text, making minor lexical or grammatical changes. In its most comprehensive sense revision, frequently followed up by extensive rewriting, is a basic element in the craft of writing. For many professional writers revision and rewriting are simply the condition for their craft, the essence of the writing process. From this it follows that the value of word processors cannot be that they free the writer from rewriting.

Writers differ from one another, of course, with respect to how much rewriting they need to do. In a few cases is the writers's first draft is pretty much their last. These writers usually work very slowly and laboriously, spending lot of time in planning ahead and in crafting each sentence, one by one. These writers do not demonstrate that revision is only an accidental aspect of the writing process. They only show that in some cases the revision process takes place in the writer's head or body. It remains, I believe, that for most writers rewriting constitutes an important aspect of the ***thinking through*** of the material they are trying to write about.

G. My Personal Experience of Word Processing

Throughout this chapter I have occasionally referred to my own experience of using word processors. So it may be appropriate to conclude this chapter with a brief description of my own experience of using computers in the process of writing, including the writing of this thesis. Aside from using word processors in the writing of this thesis I have used word processors for about seven years, first as a student and later in my work as a teacher and an administrator at the University of Iceland. To begin with, I used mainly the word processing system available on the university computer but later, after moving back home to Iceland, I bought my own personal computer, *Macintosh Plus*, and a sophisticated word processing system called *Microsoft Word*. I have tried other systems as well but I am beginning to believe that this system is one of the most powerful word processing systems available on microcomputers today.

Now, how does my own experience fit into what has been said sofar about the meaning and significance of word processing? First of all, I must admit that I use word processors quite frequently, both at home and at work. Yet, my use of the word processor has changed considerably over time. As indicated before, I had great expectations when I first began to use a word processor. I can recall my initial fascination with the increased control the computer gave me over the text. At first I intended to exploit these new possibilities in the composition process by using what writing researchers have called "building-block" composing. The idea was to make use of the various editing capabilities and simply "throw in" many ideas, paragraphs, and quotations, with the idea of getting it all together at a later point, sparing me the time it takes to rewrite every note I had taken down when thinking through my topic. Somehow this method did not work very well for me and the "whole" I was looking for constantly eluded me. In front of the computer screen I tend to loose all sense of where I am in the text and where I am going. I keep repeating myself, lose track, especially when I begin to make substantial changes by cutting and pasting, and sometimes I end up with an incomprehensive collection of paragraphs that does not at all deserve to be called "text." I somehow feel that because they (the paragraphs) are there they should fit somewhere in. Sometimes I even discover when I make the hard copy that some paragraphs appear more than once on the printout! When this happens it doesn't help me to return to the computer. I have to sit down with my notebook begin with the first sentence and then find my way through the text, paragraph by paragraph. So when I compose on the keyboard I keep on making "hard copies" all the time. I believe, for instance, that I have made up to ten or twelve copies of each chapter of this thesis! I just need it for revising.

I have gradually adapted to the word processor, and today I use the word processor more consciously than before. After seven years of using the word processor I do very little of electronic cutting and pasting and most of my initial writing is accomplished by handwriting. For most writing I *need* my slow (and bad) handwriting. Perhaps it reminds me of the old Icelandic manuscripts Icelandic people are so proud of? I don't know. What I do know is that I write on the right page of notebooks, using the left page for later reflections and clarifications. How do I do that on the computer screen? To begin with I tried to put such comments into brackets or into a special "file" but somehow it didn't work. This "extra" writing is neither a *part* of the main text, nor an *additional* text existing *apart* from the main text. It is something that is *beside* the main text (on the left side usually), *pointing* to certain places in the main text. This is hard to explain. The fact is that the screen imposes a uniform spacial dimension to my writing which makes it difficult for me to use it for composing. Only after few pages of writing do I sit down in front of my computer to copy it onto a disc. After few pages I want to see how it "looks" on a computer printout. As it stands now I spend most of my writing time with my notebook, printing out a hard copy now and then. Revising takes place solely on paper!

I also need to be able to take my text with me anywhere I go. I like to be able to sit down in restaurants, parks, and even on a bus, and jot down few ideas, add something or correct earlier versions of what I have been writing. This is why I like pens so much, especially ball-point or fiber pens. I find it indeed remarkable to be able to carry with me my writing instruments and use it without a delay. And in spite of my bad handwriting, it is part of *me*. Similarly, I find it difficult to sit in front of the computer and stare at the screen while trying to think of what to write. I get headaches, my shoulders get stiff and my eyes tired. And I have a hard time concentrating in front of the computer screen. Still I have to admit that I need the word processor. The notebook version of my text is fixed on the paper -- it is unprocessable. At certain points in the writing process I want to be able to print out a "clean" version of my text, "duplicate" it, "repaginate" it, or process it in some other way. Heidegger was probably right -- technology posits the world as something stored and ready for use, for consumption and further manipulation. What I like most, however, is the possibility of printing. It is a real treat to watch the laser-printer pour out page after page of nicely formatted and good looking text. It gives me a sense of having accomplished something. I also need the printed version for revision. It is both very helpful and enjoyable to sit down with a nice printout and begin to browse through the pages, discover the *structure* of the text and begin to make corrections. Sometimes I even print the text single spaced in two colums to make it look like a book. In that way more text gets on the page and it also helps me to read it as someone else's text. Usually, however, it does not take more than one hour to make a nice printout look like a handwritten draft again with arrows here and arrows there, indicating that something was missing or something should be elsewhere. But I don't mind making my printout "messy" -- it is simply part of the process of writing for me!

I don't know whether the word processor has changed the style of my writing. I do know, though, that today I am much more *paragraph conscious* than before. I see my text as composed of paragraphs. This is perhaps because the word processing system I use works on the basis of paragraphs! Paragraphs are the system's main unit of analysis. Also, I find that I decide earlier on main parts of the text, chapters, headings and so on. In the early days of my own use of computers for writing I began by actually composing on the computer. In this process, however, I discovered that my way of composing was somehow changing. When I wrote out longhand I did not plan the structure of my thesis beforehand in any details but I wrote out my ideas until some sort of structure began to show itself. Then I usually began by constructing a preliminary plan which I kept at the bottom of my brain until my writing unveiled a new, more comprehensive structure. When writing on the computer, on the other hand, I noticed that changes were beginning to take place in the way I wrote. I noticed that I began by deciding on major chapters or sections so that the structure of the thesis was created before I actually began to write. But somewhere on the way I usually found out that those structures I had planned at the outset stood in the way of my writing, forcing me to make a whole new start. As it stands now I am back to my "old" way of writing, using a notebook, writing on the one side and using the other page for comments and references, constantly making new starts and constantly rewriting. Only when I have a finished draft, or nearly finished draft, in my hands do I return to the computer. A reflection on those early experiences reveals that the technical possibilities of the word processor was affecting the way I wrote. The "file" system of MTS, and the word processing layout (thesis layout), with its build in section- and chapters macros, favored, not determined, a different sort of writing than I was used to.

Chapter VI

TOWARD A PEDAGOGY OF WORD PROCESSING

In the previous chapter I undertook a hermeneutic phenomenological reflection on the meaning of word processing by investigating, among other things, expectations toward this new technology and the experience of writing -- with and without word processors. The question then arises, how does one evaluate the pedagogic significance of word processing? In my reflection on word processing I have attempted to make explicit some of the presuppositions underlying the interest in this phenomenon -- some conditions for the possibility of this application -- and in this chapter I intend to gather the main pedagogic conclusions suggested in the previous chapter and situate them in a wider pedagogic context.

My assumption has been that writing instruments are never neutral and that each of them brings about certain transformations in the experience of writing and possibly in the meaning of writing. Some instruments favor slow motion handwriting, which makes the act of writing something like the art of painting or sculpturing. This seems to foster careful involvement and reflection as a part of the writing process. Other tools, like typewriters, encourage speed and give the writer a stronger sense of control and "publication" than previous instruments ever did. And still others, like the word processor, in addition to reinforcing much of what typewriters do, introduce new possibilities we are just beginning to understand. But while word processors reinforce several tendencies started by previous instruments they suppress others. The significance of these changes, however, are to be found in the possibility that they may ultimately bring about changes in the very way we think about ourselves and the world around us as well as in the way we experience writing. This means that an evaluation of the meaning and significance of any writing instrument must concern itself with the tendencies favored by the particular instrument. The book is said to have created the condition for the possibility of analytic and contemplative mentality. But what condition are word processors likely to create? for better writing? for easier writing? for more joyful writing? To understand what a given writing instrument stands for, then, is to understand the kind of writing this instrument favors.

Underlying my discussion about writing and computers is the conviction that an evaluation of the educational significance of word processing presupposes a pedagogy of writing, questions pertaining to the pedagogic good of writing. Why do we teach writing? How do we teach writing? It is clear that educators need to consider writing as an educational possibility that deserves serious pedagogic deliberation. For better or for worse, writing, or more generally literacy, reflects many of the educational ideals of Western educational history. The notion of an "educated" person, which I take to be a necessary presupposition of any educational system, is largely dependent upon the ability to read and write, to understand written texts, to express oneself in writing and to be willing and able to submit to standards set by writing. The idea is simply that a pedagogy of word processing presupposes a conception of the pedagogic good of writing. It is important to emphasize that the notion of the pedagogic good of writing is nothing to shy away from. In every teacher's response to students' writings there are certain presuppositions at work, presuppositions which reflect a specific view of knowledge, communication, thinking, expression, conversation and so forth. In pedagogic theorizing, however, these implicit presupposition are raised to a level of conscious reflection.

All this can and must be worked into a pedagogy of word processing. I have suggested that the question of the educational value of word processing is ultimately a question about our conception and evaluation of literacy. In the remainder of this chapter I shall try to draw together the main conclusions of the previous reflection on word processing with the intent of drawing further pedagogic conclusions. I shall organize my discussion around four themes which I have chosen as central themes in this discussion. These themes are "Word Processing and Language Use," "The Quest For Efficiency and Control," "Word Processing and Automation" and "Literacy In Information Society." Finally, I shall make a few concluding remarks about the present research on word processing.

A. Word Processing and Language Use

The question of the significance of writing is, as previously suggested, inseparable from the question of the significance of language use. Language, as we have seen, is probably the single most important condition of human existence, even to the point that it becomes senseless to speak of language as isolated from other "conditions." We may recall Gadamer's words from *Truth and Method* (1982) that only because we have language do we have a world. The idea is that language is the most important "field" in which meaning becomes visible. As Heidegger put it, "language is the house of Being." All language use, therefore, contains the possibility of having a clear pedagogic significance, depending on our perception of its nature. In my discussion I have brought attention to the existential significance of language for it is assumed that any evaluation of word processing must have a clear conception of the meaning and significance of language, particularly the transformations brought about by the technologizing of the word, that is, by writing.

Writing, it has been shown, establishes a special relationship to language. First of all, traditional writing instruments are slow. They force writers to express themselves slowly, much slower than people do in speaking. In this way writing encourages a more reflective relationship with language than speaking, allowing the writer to undertake a careful consideration of sentence construction and word selection. The writer is able to stop and think the material through during the act of writing, look back over the text and plan more carefully than oral discourse allows. In other words, the writer can attend to every word chosen, every sentence formulated and every paragraph to fullfill his or her intentions. This aspect of writing fosters what I would call *language and meaning consciousness*, the awareness of the significance of reflective language use. But a reflective relationship to language means a reflective relationship to the world. Educational researchers have for instance noticed how writing practices in schools helps students to become more attentive towards their own experiences. This results from the fact that writing *objectifies* experience more concretely than spoken language, creating a productive distance between experience and thinking. Hence:

Conclusion I

> *Any instrument or technique that has the effect of making the experience of writing more like speaking does not serve those educational objectives which attempt to exploit the significance of the difference between written and spoken language.*

Printed words, however, are things or objects far more so than the words of traditional writing. Print *objectifies* the word more than handwriting is able to do. In making the word appear more like a thing or an object print *depersonalizes* the word, creating a special sort of distance between the writer or the reader and the text. This makes it unthinkable for many people to write personal letters on a typewriter or with word processing facilities. It is this de-personalization that allows writers using word processing equipments to read their own writing as someone else's. "I find it so much easier to evaluate the quality of my work when reading it from a computer printout," is a familiar expression. Living language, however, is more than a "thing" to be processed and manipulated through electric devices like computers. We exist in language like a fish in water. Language is part of our world and like the world language resists all attempts to fully objectify it. Language, as hermeneutic philosophers have repeatedly pointed out, is historical and serves as a memory for us. To see language simply as something to process and to control is to lose sight of the deeper existential significance of it. There is a *poetic* dimension of language that resists such a technical manipulation and which students must be brought into contact with. This dimension of language is not something that merely applies to certain types of writing such a literature. ***Poetizing***, as van Manen (1984c) points out, is not merely a type of poetry, the making of verses. "Poetizing," van Manen writes, is "a thinking on original experience and is thus speaking in a more primal sense" (p. 39). In Heidegger's terminology, fundamental thinking, fundamental poetizing, and the ***thanking*** devotion to Being are somehow rooted in the same endeavor, recalling the deepest sense of our "building dwelling and thinking." As a kind of thinking whose effort is to bring new light and new meaning to things, poetic thinking is the direct opposite of instrumental or calculative thinking which Papert speaks so favorably about in *Mindstorms*.

Word processing, as shown in the previous chapter, reinforces the objectification of the word initiated by writing as it allows more conscious control over the text, giving the writer a strong feeling for the text as a thing. I have argued that the idea of word processing applies more easily to certain kinds of writing than others and that the writing that lends itself most easily to word processing is information-based writing, the writing of reports and of other texts where the information content is more important than other rhetorical principles, such as coherence, argumentation or voice. Information is the sort of knowledge that can most easily be broken up into relatively self-contained blocks of text. To treat text as a thing means to be able to "process" it in various ways: classify it, numerate it, repaginate it, count it, dublicate it, create a table of contents automatically, and so on. The proliferation of reports in office work since word processing became widespread speaks to this phenomenon. The computer has everything for this sort of work: word processing, formatting facilities, electronic cutting and pasting, automatic dictionary as well as powerful editing capabilities. My conclusion therefore becomes:

Conclusion II

> *Word processing favors an instrumental relationship to language that highlights technical control and instant manipulation. In so doing, it reveals knowledge as inFORMation, as something already formed and essentially neutral. As such it hides the dialogical nature of all knowledge and the struggle for formulation associated with creative writing.*

Rhetoric that emphasizes outlining, form-writing and five-paragraph themes, which is presupposed in many computer devices, but fails to open up a relationship with what I called the poetic dimension of language, or encourage what I have called language and meaning consciousness or sensitivity, does not address the most important function of language and language competence. It is worth noting in this context that, contrary to what many people believe, technological progress, particularly the computerization of society, has been found to have resulted in a widespread deskilling of literate labor. The reading and writing required in white-collar work involves literal information processing, requiring standardized responses to routine texts (Coe, 1978; de Castell & Luke, 1987; see also Braverman 1974 about the deskilling of office work). Many of the writing programs which offer automatic feedback to writers during or after the writing process may actually lead to such deskilling.

B. The Quest for Efficiency and Control

Throughout this study I have drawn attention to the feeling of control and efficiency usually associated with word processing through such facilities as macros, automatic formatting, and so on. Efficiency and control continue to be the most frequently given reasons for using word processors. It would not be appropriate for us to discount these accounts. However, I maintain that there is another side to this that needs to be considered. We still need to examine the grounds upon which such experiences arise. What conception of writing underlies this quest for control and efficiency? What is revealed and what is concealed in the quest for control and efficiency? It is impossible, I believe, to jump to any general conclusions about this issue. It is necessary to consider various aspects of the writing process in this light before we can begin to suggest any general insight.

Both software designers, writing specialists and lay people have identified a number of ways in which word processing can influence the conditions for writing as a result of a greater control it gives the writer over the production of texts. We are told that the sophisticated technical facilities of most word processors will be able to radically change the experience of composing, making it much easier and more enjoyable than traditional writing instruments. I have tried to show how the expectations to these technical possibilities are often based on a superficial understanding of writing, particularly of the meaning of the lived experience of writing. A case in point is the notion of *building-block composition*, the view that electronic cutting and pasting allows the writer to throw in ideas, references, as they come to hand, with the intention of rearranging the whole thing at a later point. We are told that the word processor allows the writer to jot down ideas as they come to mind, or references as they come to hand, without worrying about the final product. The electronic cutting and pasting allows the writer to rearrange the whole "file" at a later point to make the desired text, leaving some things out for later use.

The shortcomings of this view have already been discussed and it is suggested that much of what has been written about the role of word processors in the composition process presupposes an old and largely outdated theory of composition. It assumes, as the ancient Greek and Roman rhetoricians did, that composition is largely a mechanical task. By taking the notion of composition (FORMulation as giving form to) too literally -- particularly the "putting together" meaning of composition -- this rhetoric overlooks the struggle for coherence in the writing process; the struggle writers have with deciding what to write next, what to include and what to exclude, or what matters most to writers as they strive to organize their discourse. What this view overlooks is the "hermeneutic circle" that is always at play in writing, the dialectic and tension between the "part" and the "whole" and the author's intentions and what is actually coming out. Writing is a constant search for coherence and for wholeness. It is a "back and forth" process, not a linear process that begins with an "outline" and goes straight on to a finished text. The rhetoric underlying the idea of building-block composing is based on a mechanical conception of writing composition which does not recognize the constant search for coherence and whole in the writing process. Here the control over the text provided by the word processor may actually stand in the way of successful writing. My third conclusion therefore becomes:

Conclusion III

> *The notion of a building-block composing is based on an ancient rhetoric that overlooks the seach for coherence, back and forth movement which results from the search for meaning and the idea formulation involved in creative writing.*

The notion of building-block composition, however, is only part of a more general attitude towards word processing, that is, the idea of the word processor as labor-saving tool. This idea underlies most applications that have been suggested in this field. This is for instance true for most of the things that have been written about the good of word processing in the area of revision. We are told that word processing can make the revision process both easier and more enjoyable than hitherto by freeing the writer from the burden of tedious rewriting which usually goes along with revision of texts. But is this really so? Is rewriting and recopying something we truly want to get rid of? I have suggested that the conception of revision that underlies much of what has been said about the value of word-processors in the revision process is basically mistaken. At times it seems as if these authors fail to distinguish adequately between "editing" a text and "revising" a text, the former referring to the polishing of the text, making minor lexical or grammatical changes, while the latter refers to the process of re-viewing the text as a whole for balance, form, rhythm, flow of arguments, and so on. For many professional writers revision and rewriting are simply the essence of their craft, the essence of the writing process. My fourth conclusion becomes:

Conclusion IV

> *The view that word processors will free writers from the burden of rewriting and recopying overlooks the fact that for many writers rewriting is the essence of the writing process, the condition for the craft. Rewriting is for many authors part of the thinking through of the material.*

Writers differ from one another, of course, with respect to how much rewriting they need to do. In a few cases the writer's first draft is pretty much his or her last. Such writers usually work very slowly and laboriously, spending lots of time in planning ahead and in crafting each sentence, one by one. It remains, though, that for most writers rewriting constitutes an important aspect of the "thinking through" of the material they are trying to write about. As so many writers have confirmed on various occasions, "How do I know what I think until I see what I write?" In other words, the value of word processing can hardly be found in the possibility that it frees the writer from the burden of rewriting. For most writers rewriting is simply the condition for the possibility of the craft.

The above view fails, in my view, to recognize the unity of mind and body, or the fact that for many authors the *act* of writing is inseparable from the thinking through of the material. It was suggested that this was caused both by the growing influence of technical or instrumental rationality as well as by the metaphysics of mind/body dualism so prevalent in our Western culture. According to our philosophical heritage, the body is not capable of thinking. Thinking takes place "in" the head, more precisely in the brain. Consequently we are told that any tool or any instrument that helps to reduce the influences of the body is good for writing, for writing is essentially a mental activity. For this reason, a number of researchers value word processors on the ground that their sophisticated technical capabilities free the writer from the "burden" of the physical involvement in writing. These authors point out, that the physical activity of writing is often hard on writers, especially young writers, and that the word processor helps the writer to overcome many of these obstacles. The primary obstacle here is of course handwriting. Writing on the keyboard is much easier, once the skill of typing is achieved, than writing out longhand. To this some users add that the word processor allows them to write as fast as their thoughts flow, without having to worry about writing everything up again. Electronic pasting and cutting, together will all other automatic editing facilities available on word processors, guarantees that as little effort is wasted as possible. In this way, word processors free writers from much of the rewriting that usually goes along with ordinary handwriting.

How do we respond to such claims? Does handwriting really have a place in times of mechanical reproduction of texts or is any such attempt simply a nostalgia to something which doesn't really belong to modern curriculum? If it is true, however, that there is indeed some sort of a correspondence between mind and the physical act of writing, as both writers and philosophers argue, then we need to explore the psychic framework associated with word-processing and perhaps reconsider the pedagogic value of handwriting. The physical resistance of traditional writing instruments favors deliberation and reflection on the part of the writer while the word processor favors psychic dispositions that are closer to the redundancy of spoken language. I believe that handwriting does indeed have a place, even more so in times when mechanical production and reproduction of texts are becoming commonplace. This in not because handwriting is difficult, but because it comes closer to a special mood, a psychic disposition, that encourages precision, patience and artistic sensitivity. My next conclusion is:

Conclusion V

> *Up till now we have been occupied with improving our writing instruments with respect to speed and control. The physical resistance of traditional writing instruments, however, favors deliberation and reflection on the part of the writer while the word processor favors psychic dispositions that are closer to the redundancy of spoken language. It is therefore necessary to reevaluate the pedagogic significance of handwriting for all age groups.*

This is not to say that handwriting guarantees these qualities, but merely that it *favors* them. This conclusion is particularly important in early writing education where it is important that young children make use of all their senses in learning. If it is true that drawing and scribbling are natural to young children, and that their first writing is an extension of their scribbling, it seems that handwriting must have a place in the curriculum. Mechanical production of letters and words is easy to master at a later point. In other words, one might argue that the mood fostered by handwriting has a clear pedagogical advantage at an early age over speed and efficiency.

It was also found, that people have strong preferences regarding the way they write, both with respect to the material they use and also concerning the place in which they write. Some people do not bother to learn how to operate a word processor; they do not feel the need to do so. Others are sceptical about the alleged efficiency of the word processor and doubt that the word processor does, in the end, save time. Still others are afraid of losing more than they gain from using a word processor in terms of conveniences. The fact is that preferences about the use of instruments, and perceptions about their efficiency, are inseparable from the user's perception of the good life. If writers prefer to sit back and jot down their thoughts in an armchair, or sit under a tree in the garden, the word processor will not always be the most appropriate thing to use. Similarly, writers often develop strong ideocyncratic preferences about the material they use, which shows that for many writers writing is a highly ritualistic practice. My sixth conclusion thus becomes:

Conclusion VI

> *The quest for efficiency and control hides the fact that writing is a part of much larger context of meanings and practices, a form of life. To turn away from the pen and the paper to keyboard and screenwriting is therefore a question of much more than degrees of efficiency. No one should therefore be made to adjust to the word processor against his or her will.*

This means, first of all, that all students should have the choice of using or not using word processors in schools. More generally, however, it means that writing teachers need to become attentive to the personal meanings and practices associated with writing. Not everyone is able to write with lot of people around and not everyone is willing to let others see everything he or she writes. Nothing is more personal than one's own thoughts and publicity is not an unquestioned value. Any unquestioned value in writing instruction may affect the experience of writing in ways which no one would willingly choose.

C. The Tutorial Function of Word Processors

Word processing is in many ways a primary example of the contemporary quest for *automation*. This is not only evident in the design of the so-called "function keys" and "macros" that allow the writer to do complex routines, such as formatting, with few strokes but also in the production of so-called "interactive" programs that are designed to give students automatic response to their writings. Programs are now available that provide students with either a quantitative analysis of their text whenever needed or with different sorts of comments and questions, depending on the "stage" at which they are in the writing process. As pointed out before, many educational theorists believe that such programs are the first step toward an individualization of writing instruction, offering students help when it is most needed. Burn's program described in the chapter IV is a good example of automatic "computer response" in writing instruction. It is a program designed to "help" a student to develop a thesis statement on a particular issue by catching pre-defined words written by the student on the computer and feeding them back in prompts and questions about the topic on the screen.

A brief observation of the workings of this program immediately raises a number of fundamental questions about educators, educational discourse and the relationship to technology. What kind of presuppositions are at work here? What conception of learning, teaching and communicating is hiding beneath such a program? What is the essential difference between response and mere feedback? What are the original contexts which gave rise to these two different concepts? Is feedback a response in the sense of being responsible? What kind of world is disclosed in this program? My point is that programs like this presuppose a highly technocratic view of humans, a worldview that is totally uncritical of its basic prejudices. Advocates of these programs make little or no attempt to critically examine its most fundamental presuppositions concerning the meaning of fundamental educational experiences. It makes no attempt, for instance, to elucidate the pedagogic meaning of basic concepts such as "individualization," "response," "dialogue" or "communication." It also fails to see that the ability to write about something requires more than heuristic devices but presupposes what Paulo Freire (1987) calls the "ability to read the world," to become sensitive to the unfamiliar, or what Maxine Greene (1978) calls to "break out of the ordinary." It presupposes the ability to ask questions, to be thoughtful and to become involved with the issue under study.

On the other hand, the novelty of these attempts should not be overlooked. There is no doubt that the technically sophisticated possibilities of computers will greatly enhance possibilities in curriculum development. Educators need, however, to be aware of the dangers inherent in the tendency to anthropomorphize the computer by speaking of the computer as holding a "dialogue," as "thinking," or as "communicating." This kind of talk is not just metaphorical: it speaks to the most fundamental context through which our understanding of technology and educational practice is realized. It is indeed remarkable that anyone could suggest that a procedure that catches isolated, meaningless words or phrases and feeds them back in a context that sometimes makes sense, could be used to replace a genuine educational encounter between a student and a teacher? To speak of "dialogue" between a person and a computer is to fall into what in analytic philosophy is known as a "conceptual error." It reduces the rich existential meaning of dialogue to a simple system of mechanical feedback.

Everyone agrees that good response is of crucial importance in writing instruction; the question concerns how we understand the phenomenon. We may recall the view discussed in chapter II which distinguished between technics and moral action on the ground that moral or pedagogic action is always oriented towards the unique, to the individual, while technics subsumes the individual under a general class, based on "operational definition," or what Wittgensteinian philosophers would called "family resemblance," of intelligence, class position or other social or psychological characteristics. But the teacher has to be there for the student, the individual student, to be able to give a truly *authentic* response to papers or journals, a response based on an understanding of the strength and weaknesses of particular works. The teacher must also be attentive to the personal needs of the students themselves, and to what sort of response is appropriate for this or that student. As Maxine Greene (1982) writes, "the teacher of literacy, to be authentic and effective, must be inquirer, discoverer, critic, sometimes loved one. He or she must be someone who cares, someone who is ready to engage a subject matter or a created form as an always open possibility" (p. 84). In other words, the teacher's actions must always exemplify a pedagogic judgement, what van Manen (1984a) calls *pedagogic thoughtfulness* or *pedagogic tactfulness*. In the classroom every teacher must decide what kind of response to students' writings is appropriate and under what circumstances. No rules or laws can free teachers from making use of their own judgement in such cases.

Conclusion VII

> *To see prompting programs as the condition for the possibility of individualizing instruction is to miss the essential nature of pedagogic encounter. To individualize, in the pedagogic sense of orienting to the individual, means to exercise the will and effort to understand the individuality of the individual, the uniqueness of the pedagogic situation. The prompting program is directed only to the abstracted individual in the most simplistic way.*

The same holds true for the application of instruments and techniques. Teachers have to decide when and how to apply the techniques and tools available to them in their teaching. And to be pedagogic, such decisions must take account of the whole situation and must constantly ask about the good of the act. Speaking of a "conversation" or a "dialogue" with computers is not a good pedagogy, for the traditional meanings of these terms may, as a consequence, gradually fall into oblivion in educational discourse and theorizing. And we can also ask like Davy (1984), what kind of culture are we developing if people have to meet its most powerful ideas through machines rather than through people?

D. Literacy in Information Society

In the first chapter I suggested that the rhetoric surrounding computers must be viewed in relation to popular rhetoric about the information society in which technical skills and something called "computer literacy" play a central role. What responsibility does the so-called "information explosion" put on educators? What does literacy mean in this context? We are told that in the future society, the individual needs to have acquired certain "information skill," the skills it takes to access and manipulate information through new technological channels such as large databases and networks. Does this mean that literacy refers to the skills it takes to know the right codes or the correct procedures that allow one to access databases? Or does it refer to the general knowledge that is needed to look up and find what one is looking for? Does it perhaps mean the ability to distinguish between the garbage and the treasures by making the student "critical" in the Kantian sense of understanding the conditions upon which knowledge-claims arise?

I propose that the issue has to do with the meaning and significance of literacy in contemporary society. Literacy means many things but the meaning I want to emphasize here, and should perhaps be called *critical literacy*, has to do with a special kind of a relationship between subjectivity and objectivity, the individual and the world. Literacy must not be treated in isolation. It is not a thing or something we have. Rather, it is a particular kind of *relationship* and it always occurs in a social context. The so-called information revolution does not only make it increasingly difficult for the individual to know what is worth reading, but the proliferation of written material today also threatens to silence the individual. To find one's own *voice* in the world of millions of anynomous voices is not an easy task. Critical literacy is important for persons to achieve what Greene (1978) calls "wide-awakeness," in order to resist the forces of cynicism and powerlessness that silence as they paralyse (p. 55). The crucial question is how, given the pressures of the times and the conservativism of educational institutions today, can one educate for interrogation and critique? (p. 58). How can schools equip students to decipher, to decode, to surpass and to transform? Without such critique, Greene says, school are likely to be used for domination and for fixing the vision of young people on a reality others have defined (p. 60). So, like Freire, Greene proposes that self-reflectiveness be encouraged, that teacher educators and their students be stimulated to think about their own thinking and to reflect upon their own reflecting. This seems to be inherently liberating and may help in delineating possibilities never seen before -- in the processes of futuring and choosing in which individuals must engage in order to create themselves (p. 61). It is therefore possible to say:

Literacy, therefore, ought to be conceived as an opening, a becoming, never as a fixed end, something one "has" after practicing writing skills in school. Participation in a literate cultural tradition requires far more than mere mechancial skills. As de Castell and Luke (1987) argue, it requires the ability to grasp meaning by reading and listening, and to transform meaning by writing and speaking (p. 429). Bringing students' meaning to consciousness helps them to realize the the world is not simply "out there." unchangeable and beyond their touch. As Freire and Macedo (1987) write, "reading the word and learning how to write the word so one can later read it are preceded by learning how to 'write' the world, that is, having the experience of changing the world and of touching the world" (p. xvii, xviii). According to this view language is the means to a critical consciousness, which, in turn, is the means of conceiving of change and of making choices to bring about further transformations. Thus, naming the world transforms reality from "things" in the present moment to activities in response to situations, processes, to "becoming" (Berthoff, 1987, p. xix).

So, to be "literate" in the sense spoken of here is less to be in "possession" something like skills or techniques, than it is to understand what it means to engage in a *dialogical or conversational relationship* to the subject matter, conversation for the sake of enabling students to see and evaluate. In *Making Sense Together: An Introduction to Wild Sociology* (1974) O'Neill quotes Michael Oakeshott saying that, "Education, properly speaking, is an initiation into the skill and partnership of this conversation in which we learn to recognize the voices, to distinguish the proper occasion of utterance, and in which we acquire the intellectual and moral habits appropriate to conversation" (p. 17). It is always personal and based on, to begin with, personal and cultural perspectives. But the aim of literacy is not simply to help students to "de-code" the larger culture in terms of their own cultural codes but to help them to break out of those codes as well, to enlarge their perspectives through what Gadamer calls *fusion of horizons*. My next conclusion becomes:

Conclusion VIII

> *One of the fundamental challenges for literacy instruction in modern information society is to deal with the struggle between common meanings and personal initiative. Schools must encourage the kind of literacy that helps students to establish a conversational relationship to the world. The meaning of literacy germane to modern information society is not, contrary to what many people think, constituted by the skills of computer-use or information handling. Rather, it is constituted by contemplative formulation of ideas based on the ability to read and rewrite the world and the word, including the condition for the possibility of different truth-claims*

This kind of literacy is similarly not one which emphasizes "discovery methods" by teaching students where to look for answers to their questions, whether in databases or libraries, or training them in scientific methodology. It is a literacy which emphasizes discovery methods in the form of questioning and wondering and exploring the variety of meanings a thing can have. But questioning is a true pedagogic challenge. In *The Tone of Teaching* (1986) van Manen points out how a child's barrage of questions may merely be signs of shallow or precocious curiosity when they hurry the child too hastily into a premature grasping of phenomena for which a child is simply not ready. Van Manen writes, "A precocious child knows a great deal, or at least seems to. But really, her or she knows only many answers to many questions, most of which were never real questions to begin with" (p. 40). Genuine questioning is more an art and thoughtfulness than a technique for there is no method of learning to question or of seeing what is questionable. Questioning truly begins when something claims and addresses *us*, provoking *our* response. To question something means to be truly *interested* in it in the original sense of "inter-esse," of being in the midst of things. If we are engaged in a genuine questioning, as van Manen (1984) points out, then the questions themselves arise "from the heart of our existence, from the center of our being" (p. 45). So, one of the things modern schools need to foster is a genuine interest in students, not just superficial curiosity.

This does not mean that students' literary practices in schools must be completely "open" and lack all conclusiveness. On the contrary, the best work would be conclusive (standing for something) and authoritative, and yet it would also be open to influences. In other words, the work can be conclusive even though it is revisable. What is revisable, however, is always a particular conclusion, opinion or particular results, but what really isn't revisable is the *need* to develop a a conclusive relationship to the problem at hand. This means that students' writings is more than a personal expression that does not take any notice of what others have said or written on that issue. It is the opposite. Dialogical relationship (as the word itself signifies) always speaks to the attitude of anticipating different opinions, different questions to be asked and different answers that can be given. This is the true meaning of communication. To communicate is to belong to a community and to be sensitive to the standards set in part by that community. Or as Greene (1978) puts it so eloquently, "What has so long been treated as unquestionable must be questioned - from a human vantage point and on the ground of shared ethical concerns" (p. 66). Educators must find ways to encourage this sort of literacy but it is hard to see what role word processors would play in that practice.

E. Conclusion

In this study I have emphasized that an evaluation of word processing presupposes a pedagogy of writing, a normative conception of literacy as something that is good for students. I have also said that there is a need for a hermeneutic phenomenological analysis of the notion of literacy. One of my main conclusions is that much of what has been said about the good of word processing over the last few years is based on a narrow technocratic skill-based account of writing and language. In most cases this is an account which is based on a strange mixture of ancient and modern rhetoric and which largely ignores the meaning of the lived experience of writing. My conclusion is that the rhetoric surrounding word processing reveals a narrow and highly technocratic understanding of writing, and hence of literacy, and that there is a need for a radical reorientation toward this educationally important issue. I furthermore believe that the contemporary interest in word processing for educational uses is essentially technological in the sense of assuming that "illiteracy" is a problem that can in principle be solved by a method -- the essential assumption of the technocratic mind. Literacy is treated as a universal, culturally neutral information-processing skill that can be broken into different cognitive skill "domains" (de Castell & Luke, p. 421).

I have suggested that the quest for mechanical skills so prominent in American educational history fails to grasp the deeper meaning and significance of literacy, for instance the kind of literacy Maxine Greene (1978) calls "significant cultural literacy" and

Paulo Freire (1987) calls "critical literacy." Similarly, there is not much opportunity in this worldview for an appreciation of such things as deliberation, reflection, attentive awareness or the cultivation of habit. Of course skill or technique mastery is involved in writing but, as pointed out earlier, a skill is no longer thought of as a competence, a capacity or an ability to do something, but as a bit of learnable behaviour that one can mastered by drill and practice. De Castell and Luke (1987) suggest that the current "literacy crisis" does not indicate a failure of the educational system, but rather, ironically, signals instructional and curricular effectiveness. Students have learned precisely what technocratic curricula have taught: the mechanical skills of contending with texts (p. 429). The question is whether critical and aesthetic literacy is still a real possibility in the growing hegemony of technical or instrumental rationality.

It was suggested that word processors may contribute to writing in many ways and will likely become *the* writing instruments for the next decades. After all, they give the writer more control over the text than ordinary writing instruments and they are, or at least perceived to be, labor saving devices although their "user friendliness" is in most cases greatly exaggerated for the fact is that the user has to adapt to using the word processor and that process is at times both long and difficult. However, the knowledge that blocks of text can be moved from one place to another, or that "clean" versions of the text can be printed out anytime the writer wishes, makes people more willing to undertake this often difficult task. The feeling that the text isn't "carved in stone" is important to many people. The experience of control is a strong force. The possibility of manipulating the text in the ways the word processors allows is for many people, including myself, intrinsically satisfying. It is also possible that the word processor reduces the fear of the "empty page" by allowing the writer to write out several versions of the text, without inducing the feeling that everything needs to be written up again in the end. Furthermore, the world processor will most likely be used very imaginatively in the future by both authors and teachers. Some of these ways may then become "heuristic devices" others want to try. But like any other heuristic device it depends on the purpose and the situation whether someone benefits from using it. After all, writing is such that very few techniques or methods are applicable to all writers and all situations. Word processors do not solve any substantial problems in writing instruction. In other words, the word processor, as pointed out before, may well "invite" the writer to the task of writing in a more appealing manner than ordinary writing instruments did, but it is difficult to see how it can create other conditions for the possibility of writing. The problems of writing are seldom such that they can be "solved" by a method or a tool.

So, whatever meaning the word processor may take on in the future it remains that today it is part of a highly technocratic view of writing and literacy. The question is therefore not to "find" places for word processors in the curriculum or to "implement" this tool into the classroom by means of a well prepared organizational planning. Aside from the motivating element which goes along with its use it is difficult to point to many clear pedagogic advantages in using the word processor in schools. So even if word processors are likely to become, very soon even, the major writing instruments in schools, it must not been taken as an evidence of their pedagogic value. Convenience is a remarkably strong force in the modern world and if people develop a strong feeling toward using word processors for writing, then these will soon be a taken-for-granted aspect of the educational environment. Writing is a kind of praxis and writing competence has stronger affinities with *phronesis* than it has with the kind of skills that can be learned and forgotten. Writing competence needs to be nurtured by various means. Young writers must learn to become attentive, poetic, reflective and critical. They must learn to ask questions, probe meanings and become reflective about their own experiences and break out of the ordinary. They must also learn to listen to their own voice in the midst of all the anonymous voices found everywhere around them. They must learn to critically examine truth claims found in texts they read and to situate themselves somewhere in relation to the topic. And they must learn to be animated and conclusive and yet be open to influences. In other words, they have to learn to become "authors."

This study of word processors is nothing but a sheer beginning. As indicated in Chapter I, no interpretation is ever neutral. Interpretation always exaggerates and is always guided by the questions and concerns raised by the researcher. So insofar as the purpose of this study was to suggest new ways of looking and word processing, reveal dimensions of meaning not hitherto considered, not all aspects of word processing have received equal attention. It should be kept in mind, however, that understanding is always on the way. This account of word processing will, if it speaks to the attentive reader, evoke new questions and new concerns. For myself this study has raised a number of new questions and concerns I would like to pursue further. For instance, I think it is important to explore the experience of word processing more profoundly than I have done in this study. Although I have in this study attempted to ground my interpretation of meaning as much as possible in the meaning of lived experience of writing and of word processing, it remains that much is still to be said about this aspect of the meaning of word processing. It is always possible to seek an ever more radical and comprehensive context of understanding.

Chapter VI

RE-OPENING THE QUESTION

Is there a pedagogy of technology? Is it possible to establish a pedagogic relationship to technology? I believe that these questions are of crucial educational importance, not only for the purpose of this study but for education in general. Technology is more and more shaping our lives, deeds, and thoughts. Technology is gradually becoming so taken for granted that it eludes our notice and ceases to evoke any serious questions. Problems are increasingly formulated in technical terms and technical solutions are sought. It seems as if instrumental rationality is beoming *the* rationality schools promote. In practice this means only that technology feeds itself by itself. Educational practice is gradually transformed along technological lines because the ground upon which it is evaluated is technological in nature. The question about the possibility of a pedagogy of technology is in the end the question about the possibility of transforming our thinking and concerns beyond the limits of instrumental rationality towards a pedagogically inspired orientation. This question is therefore a question about *fundamental educational and pedagogical responsibilities.*

My initial observation of the current situation led me to the conclusion that an educational response to the so-called computer revolution could neither consist in an uncritical acceptance of computers nor a total rejection. Both approaches presume to have an *a priori* knowledge of computers in education which makes it possible to pass a general judgement on the meaning and significance of computers in the curriculum without experience and without deliberation. But seeing a computer application as a *hermeneutic phenomenological problem* means that no such *a priori* knowledge of computers or education exists which allows the educator to foresee the meaning and significance of particular applications. We do, of course, have general conceptions that allow us to anticipate some outcomes but it is only in the application itself that the meaning and significance of a given application becomes visible in a concrete way. I hope that my reflection on word processing has managed to show that an educational application is always reciprocal, combining in the same thoughtful act the application of computers to educational tasks and the application of educational ideas to computers.

To say that the meaning of computers must always be sought in the application to which it is put does not mean that computers are neutral and it is only the way in which we choose to use it that determines its meaning. It only means that there is no *a priori* knowledge of computers that allows us to determine in advance the meaning and significance of any possible application of this technology. When applied to ever new situations and tasks we may perhaps begin to notice recurrent patterns, recurrent transformations in the practices and meanings to which they are put. Such knowledge then becomes part of our general or *background knowledge* of computers in education, knowledge that will be tested in future applications. In the application reflected upon in this study the *truth* of computers revealed itself in speed, control, efficiency, technical possibilities that favored information-type of knowledge, but also in the experience of joy and satisfaction that is associated with the feeling of being in control over the text in previously unknown ways.

I think that a reflection on a computer applications like word processing can teach us, not only about computers but about ourselves as educators and our present situation -- where we are coming from and where we are heading. Genuine understanding, as Gadamer says, is always a *self-understanding*. This study has attempted to show how strong the technological presuppositions are in our experience and attitudes and how unreflective educational practice tends to be in times like this. It has aimed to show that we live in a situation where one speaks of "a *deep and meaningful* (personal) relationship to computers," in which one says "to *dialogue* with computer" and in which computer metaphors are gradually replacing other metaphors by means of which we understand ourselves. Educators must put their prejudices at risk. They must examine their most fundamental presuppositions, their way of being-in the-world *as* educators so to speak. This requires a continuous application of the tradition to ourselves. It requires what Gadamer would call a "dialogical relationship to the tradition." Greene (1984) suggests that today teachers are asked to "choose themselves anew:"

> Yes, there are possibilities. There is a new world in the making, and we want it to be a world worthy of our children and responsive to desire. I think that teachers are asked to choose themselves anew at a moment like this - and to keep posing the disturbing questions. What *do* we hope for? To what end? (p. 17)

The important thing, however, is not this general knowledge of computers but what this technology comes to mean in particular situations and in relation to particular tasks. Computer may turn out to be of greatest pedagogic significance in some situations and for some purposes but not in other circumstances. But the study shows, in my view, that computers are not neutral instruments which educators can use in any way they choose. Part of any application is to consider the message of the medium. Educators need to become attentive to the kind of practices computers favor and they need to become aware of what Don Ihde calls *tool realism*, the tendency to perceive the technologically mediated world as somehow more real and more significant than the world of ordinary lived experience. Advocates of massive use of computers in the curriculum have, in my view, revealed quite clearly the proper meaning-context necessary to make the application of computers in education intelligible but they have in most cases failed to critically examine those meanings educationally and philosophically. Even if those meanings are part of our taken-for-granted presuppositions it is the responsibility of educators to put their prejudices at risk, to undertake a reflection on the truth of such presupposition. The danger of the technological framework, of which the computer is a primary expression, is *forgetfulness* -- forgetfulness of the meanings and practices that resist computerization and technologization in general.

Most educators agree that schools must always seek to give students a rich and meaningful learning experiences. But what does that mean? Does it mean to give absolute priority to one particular technological medium? Sometimes it sounds as if the computer is going to render all other educational technologies more or less obsolete by incorporating much of what earlier technology sought to accomplish. Schools should certainly have computers. But they should also have lots of books, magazines, science laboratories, arts and crafts centres, films, videoplayers and audioplayers, and so forth. Computers should have no unchallenged priority. These are times when schools tend to be relatively impoverished in the traditional tools of learning. Science laboratories are abysmal in many schools; and centers for the arts are often nonexistent while textbooks are outdated. Thus, I don't see much rationality in giving priority to computers when we are just beginning to explore their educational possibilities. Films probably do some things much better than computers and the arts and crafts do some things much better than films. The choice of medium should always be grounded in a practical wisdom, based on an experienced and on a reflective view of both the technology itself and the situation to which the technology is applied. The question is not what computers *can* do, in some form or another, but what they do well. A *balanced curriculum* does best guarantee that we provide students with rich and meaningful educational experiences, a balance between the written and the spoken word, visual and auditory media, instrumental and poetic thinking, science and the arts and the crafts, and so on. If anything should be given a priory in schools I maintain that it would be a deep and meaningful relationship to language. Language, as pointed out before, is not just one "medium" among others, but the field through which most meaning manifests itself.

Much of what has been said about the advantages of computers needs to be questioned along these lines. Is it really so that there is a need for more instrumental, systematic thinking in schools, as Papert suggests, or do we perhaps need more of reflection, deliberation, wondering, questioning, dancing, playing, drawing, and so on?

Similarly, one can ask, why is classroom talk generated by the presence of the computer in the classroom more valuable than classroom talk generated by a film? Or by a trip to the country? Or by a story? Even the motivational element involved in the use of computers has, in my view, been exaggerated. Motivation is a relative phenomenon. In times when children have to choose between BASIC and LOGO they choose LOGO. But if they have to choose between LOGO and DARK CASTLE I am afraid that few would still choose LOGO. Motivation is no doubt very important but all motivation is not necessarily meaningful or educational. If the motivation is the main thing then we should perhaps mediate all of children's learning experience through television programs like *Sesame Street*. Television is probably the most motivating technology for children ever produced. Still, education is relatively poor with respect to visual metaphors to use Papert's expression. I think that in many areas, it is exactly the motivating element, the joy of the experience of control associated with the use of computers, that will encourage their use. But the question is also whether what is attractive to children should determine what is taught in schools and how or whether what they can be brought to be interested in, and we believe to be educative and worthwhile, should do so?

I believe, however, that educators' enthusiasm for computers is somewhat fading. I also believe that it should be so. Few of the wonders we have been told about over the last six to eight years are visible in the classroom today and I don't think that the reason is simply that schools are conservative institutions (which they are) which do not respond favorably enough to the computer-revolution. And the problem is not just the software, the choice between BASIC or LOGO. The computer is, after all, just a tool or a machine and although it is "revolutionary" in many respects it does not follow that it can or should be used to revolutionize everything. It is a powerful machine in many respects. We must not, however, become so seduced by the technical possibilities of the computer that we immediately and uncritically translate these technical possibilities into genuine existential and educational possibilites, possibilities that are supposed to become meaningful choices in the everyday life of teachers and students. We should also realize that behind Papert's picture of happy children learning in a computer-based enviroment there lurks another that for many people is no less realistic: a picture of children facing keyboards and screens many hours a day, together but silent and isolated, communicating with other children and with the teacher at 1200 "baud" speed.

Educators will find a place for computers in the curricuium, gradually, not as a result of a external pressure from parents or business, or as result of massive organized implementation of computers into the schools, but as a result of practical wisdom, of bright ideas, experience and judgement and always through *particular* applications. The fact remains that we cannot build a curriculum on utopia alone, without experience and without deliberation. A pedagogic relationship to technology, if one can use such an expression, requires that we emphasize the *educational* over the *technical* in our thinking about our present and future possibilites. And practical/ethical reasoning is an approach, a mode of theorizing, that aims at changing the way we think about technology and education and hence what we *are* rather than what we *have* in terms of objectified knowledge and principles. It is reflective, critical and ethical. We acknowledge our debt to technology but we don't want to become enslaved by it.

THESES

I. The problem of computers in the curriculum is primarily not a technical problem, nor a scientific one, but a pedagogic one.

II. The pedagogic problem of computers is part of a more fundamental educational problem, i.e. the problem of coming pedagogically to terms with technology.

III. Technology, in its essence, is a mode of truth, a mode of showing.

IV. To understand technology pedagogically means to understand the use of tools and techniques in a pedagogic context, as part of an ongoing pedagogic praxis.

V. A pedagogic understanding of computers is always an understanding of particular applications of computer technology. It is only in relation to specific tasks that the technical features of computer technology receive the concreteness necessary for an understanding and evaluation of this technology.

VI. An evaluation of a computer application requires an interpretive understanding of the activity being computerized. In this sense, pedagogic application is always an application of educational ideas (the tradition) to our present situation.

VII. An evaluation of word processing requires a normative conception of writing and literacy and a hermeneutic phenomenological understanding of the act of writing. The application reveals writing as disclosed by word processing.

VIII. Contemporary educational rhetoric surronding the use of word processing in the process of writing presupposes a technocratic, skill oriented view of writing and literacy.

IX. Word processing may affect the ways in which we think of writing and literacy.

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